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Guiding the Coastal Area of New Jersey

The Basis and Background
For Interim Land Use
And Density Guidelines

**COASTAL ZONE
INFORMATION CENTER**

Dept. of Environmental Protection.

Prepared by:
Rivkin Associates, Inc.
Washington, D.C.

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New Jersey
Dept of Environmental Protection
of Marine Services
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GUIDING THE COASTAL AREA OF NEW JERSEY

The Basis and Background for
Interim Land Use and Density Guidelines

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INFORMATION CENTER

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Division of Marine Services
Office of Coastal Zone Management
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Acknowledgments

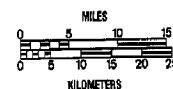
We are grateful to Commissioner David J. Bardin; Mr. Donald T. Graham, Director of the Division of Marine Services; and Mr. David N. Kinsey, Chief of the Department's Office of Coastal Zone Management for their guidance and encouragement. We appreciate also the extensive assistance of staff members from the Departments of Environmental Protection, Community Affairs, and Labor and Industry; and the review and comments of county planning directors, the Shore Builders Association and numerous individuals and environmental groups.

David C. Williams and Jerome P.D. Goss prepared elements of the study. Goldie W. Rivkin designed and Walter Roberts executed the maps, and Malcolm D. Rivkin was Project Director.

MAP 1

THE COASTAL AREA OF NEW JERSEY

 Outside Coastal Area



Scale 1:1,075,000

INTERIM LAND USE AND DENSITY GUIDELINES
STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF COASTAL ZONE MANAGEMENT

1975

INTRODUCTION

Preparation of interim land use and density guidelines for the Coastal Area of New Jersey has required an extensive analysis of the Coastal Area itself and of the short-term preservation, conservation and development issues.

Work on this study began in July, 1975. In the succeeding eight months, the consultants spent considerable time both in the Coastal Area and in Trenton. Field investigations were made and existing studies, reports, and plans dealing with the physical, economic, and social environment of the Area were reviewed. Close contact was maintained with the staffs of the Department of Environmental Protection, the Department of Community Affairs, and the Department of Labor and Industry who contributed significantly to the study. Numerous meetings were held with builders, environmental group representatives, public officials, and technical experts in various fields relating to the coastal eco-system. County planners were particularly important contacts, reviewers, and critics.

This Report presents the results of the analysis and the recommendations for the guidelines.

Section One deals with the legislative and administrative background to policy formulation by the Department of Environmental Protection. It discusses the Coastal Area Facility Review Act, the Department's management and regulatory responsibilities, and other matters relating to the purpose and role of interim guidelines.

Section Two examines the coastal environment today, both natural and man-made. The principal features which constitute the Area's unique character are discussed, along with patterns of development and density. Characteristics of the coastal economy are examined in terms of their implications for land and water use.

Section Three analyzes past population trends and provides an estimate of the scale and location of new population growth over the next few years.

Section Four identifies the primary short-term pressures and issues to be encompassed in the policy framework. It discusses housing and land demand, support facilities and services, employment generating uses, and facilities relating to energy production.

Section Five establishes the basis and rationale for the guidelines. Objectives for short-term protection and conservation of resources and for the state's role in guiding development are identified. The reasons for each set of guidelines are spelled out along with the method for formulating the policy and its substantive content. Examples of how the guidelines might be applied at a Sub-Area scale are presented. Suggestions are made for administration and dissemination.

Section Six describes the maps which accompany the report and can be used in application of the guidelines.

SECTION ONE. Legislative and Administrative Background

Synopsis

The Coastal Area Facility Review Act, its nature and purpose, is examined. Reasons for the formulation of interim land use and density guidelines are explained, and the relationships between the CAFRA program and other governmental activities affecting the Coastal Area are discussed.

I. The Coastal Area Facility Review Act

In 1973, the New Jersey Legislature passed and the Governor signed into law the Coastal Area Facility Review Act (P.L. 1973, Chapter 185, N.J.S.A. 13: 19-1 et seq.). This law, commonly known as "CAFRA," charges the Department of Environmental Protection (DEP) with preparing comprehensive programs and policies to protect the environment of an area comprising 1,376 square miles of land along the Atlantic Ocean and Delaware Bay areas of the State. The statutory Coastal Area extends from Raritan Bay and Sandy Hook at the north, south to Cape May and then north and west along the Delaware estuary to the Delaware Memorial Bridge. It ranges in width from a few thousand feet to as much as 24 miles on the landward side of the ocean. CAFRA jurisdiction extends to the three-mile territorial limit along the Atlantic coast, to the New York boundary in Raritan Bay and to the Delaware boundary in Delaware Bay. The Coastal Area encompasses ocean and bay beaches, wetlands, pine forests, the intracoastal waterway, prime agricultural land as well as other important natural features. It also includes old, established residential communities, newly developing suburbs, and the principal ocean-oriented resort and recreation communities of the State.

CAFRA requires that the Department of Environmental Protection take certain planning and regulatory actions to preserve environmental assets in the Coastal Area, while providing for new development which will meet economic and social needs of the Area and the State.

Principal deadlines for planning actions stipulated under CAFRA are:

September 1975, presentation of an environmental inventory of the Coastal Area to the Governor and Legislature.

September 1976, presentation of alternative long-term "environmental management strategies" for the Area, to the Governor and Legislature.

September 1977, selection by the Commissioner of the approved management strategy for the Coastal Area from the alternative strategies, to be presented to the Governor and Legislature.

On September 19, 1975, DEP submitted the required environmental inventory to the Governor and Legislature and distributed to the public a report depicting its contents.

CAFRA also stipulates that DEP have final jurisdiction over proposals (both private and public) for specific facilities which could have significant impact on the Area. These facilities include most major residential (25 or more dwelling units), industrial, transportation,

utilities, and energy-related construction. Permits from DEP are required before construction may begin on any such facility or use. While the applicant must meet all relevant local zoning, subdivision and other requirements, DEP has the responsibility to approve, disapprove, or approve with conditions, the final submission. It has exercised this authority since the Act took effect on September 19, 1973.

Each application for a permit must contain detailed information about the proposed facility or use in the form of an environmental impact statement that describes the project and assesses its implications for the immediate vicinity and the Coastal Area. The several divisions of DEP, the Department of Community Affairs (DCA) and Department of Labor and Industry (DLI), along with other state, county, and municipal agencies participate in the permit application review process, administered by the Division of Marine Services of DEP.

A. Highlights of the Permit Process

CAFRA stipulates (Sec. 7) the basic information to be included in the Environmental Impact Statement and the findings which the Commissioner must make to issue a permit (Sec. 10). CAFRA also authorizes the Commissioner to deny or conditionally approve a permit application if the proposed facility would violate the purpose of the statute (Sec. 11). The Department may request additional information to correct deficiencies in the applicant's initial submission. A public hearing date is set for no later than 60 days after the application is declared complete for filing. After the hearing, DEP can either ask for further information or proceed directly with its final review. In the latter case, the applicant must be notified of the final decision within 60 days of the hearing. If more information is requested, a decision is required within 90 days of receipt and acceptance of that information.

With the passage of the "90-Day Act" in 1975 (P.L. 1975, c. 232), the following additional provision applies to applications submitted after December 22, 1975: Any application will automatically be deemed approved, if a decision on the application is not made during the stipulated 60 or 90 day time periods. Thus all applications may now expect expeditious processing.

The Department has instituted an optional "pre-application" conference to enable a potential applicant to meet with DEP staff at an early date, review the prospective project, and discuss the environmental impact statement requirements. As the result of that conference, some flexibility may be established as to the degree of detail necessary for the specific environmental impact statement submission.

Through April 23, 1976, DEP had received 157 CAFRA permit applications for projects in the Coastal Area. One hundred had been acted upon. Ninety-three had been approved with or without conditions, and seven had been denied. Twenty had been withdrawn, and 37 were pending.

B. Purpose for Interim Guidelines

One of the first applications received, for a proposed ten-story apartment building in Toms River, was denied on grounds that it violated the area's existing environmental character. As an outgrowth of that action, an appeal was taken to the Coastal Area Review Board, also created under CAFRA, and comprised of the Commissioners of Community Affairs, Labor and Industry, and Environmental Protection. In upholding denial of the application, the Board urged DEP to prepare explicit criteria for allowable physical development within the Area in advance of the 1977 management strategy mandated by the Legislature.

These "interim land use and density guidelines" would have a two-fold function. They would give potential applicants and government reviewers alike a much firmer grasp on what types of land uses and densities could be considered acceptable by DEP within the Coastal Area, thereby removing much of the uncertainty inherent in a case-by-case permit review. They would also serve as an essential building block in the preparation of the mandated alternative strategies and the final management strategy.

The interim land use and density guidelines adopted by DEP follow. It is important to underscore their interim nature. The guidelines are intended to act as DEP policy until the final management strategy is prepared for the Coastal Area, no later than September 1977. As short-term policy directives, they consider the kinds of development pressures and opportunities likely to occur within the next few years.

The guidelines afford a clarity and directness to DEP actions during the period when a long-term strategy is being prepared. They encourage various forms of development and conservation actions which, in the short run, appear beneficial to the Area. By the same token, they discourage clearly detrimental activities and help protect certain sensitive land and water areas while a long-term program is devised to manage these coastal resources.

The Department anticipates that an applicant will now have greater certainty as to the nature of CAFRA policy and information requirements--before committing the expense and time to preparing permit applications in this interim period. Through widespread dissemination, discussion, and understanding of the guidelines, positive development and conservation actions will be expedited. By the same token, undertakings clearly contrary to policies expressed can be abandoned or modified prior to preparing a permit request.

The interim guidelines represent policy. They provide direction, but not "regulation" with the binding authority of a legislative or administrative action. Any sponsor of a facility or land use regulated by CAFRA will still be at liberty to submit an application for a permit and will have full recourse to normal administrative and judicial remedies in the event of an unfavorable decision.

II. Other Regulatory Systems

In addition to CAFRA, various local and state regulatory powers apply within the Coastal Area. Section 19 of the Act states:

"The provisions of this Act shall not be regarded as to be in derogation of any powers now existing and shall be regarded as supplemental and in addition to powers conferred by other laws including municipal zoning authority."

Thus, while CAFRA gives DEP final authority over certain facilities in the Coastal Area, conformance is also required with such local controls as zoning, site plan review, and subdivision, before construction may begin.

Although any project approved under CAFRA must meet local codes and ordinances, the Appellate Division of the Superior Court of New Jersey has upheld the Department's denial of locally-approved projects which are inconsistent with the Act and with Departmental guidelines. In upholding the Toms River denial, the Court stated:

"The police power of the State was not exhausted by the delegation of zoning power to municipalities wherein they were authorized to adopt zoning ordinances. The State with its reserve police power has the unquestioned authority to delegate that power to one or more agencies of governments as the Legislature may deem appropriate....

Furthermore there is no unlawful conflict or pre-emption problem between the permit power granted to the Commissioner and the zoning power of the municipality which governs the project involved herein. To require a developer to comply with local zoning regulations pertaining to land use and also to comply with use regulations designed to protect State environmental resources is not violative of any constitutional mandate. The additional burden cast upon an owner of coastal lands requiring compliance with environmental standards is a valid exercise of State police power.

The absence of zoning guidelines as such in CAFRA does not invalidate the legislation in any respect. The function of CAFRA, as already noted, is to preserve by regulation the coastal resources of the State; the guidelines are incorporated in the legislative standards for the grant or denial of a permit. These standards are manifestly appropriate for the function and purpose of this

legislation and need not be couched in the same terms as zoning legislation to withstand legal attack."

Under the Wetlands Act (N.J.S.A. 13:9A-1, et seq.), the Department must issue a permit before any development may take place on delineated wetlands. (These are excluded from the CAFRA permit reviews.) Other significant DEP review and permit powers deal with development on any waterfront or tidal or navigable waterway (riparian permits), stream encroachment and sanitary sewer systems, and air pollution control.

The management strategy for the Coastal Area, whose preparation is mandated in CAFRA by 1977, is not bound by the nature of existing regulatory authority or intergovernmental relations. It must reflect a comprehensive assessment of the physical, economic, and social situation in the Coastal Area and provide guidance to all levels of governmental activity.

III. The Federal Coastal Zone Management Program

In 1972, Congress passed a Coastal Zone Management Act. This Act supplements and supports the exercise of State powers under CAFRA. This Act encourages all coastal states and territories to establish a management program. The federal Office of Coastal Zone Management in the Department of Commerce provides support funds for studies and activities leading to the formation of each state's management program for its coastal zone and will provide further funds to assist the administration of federally approved management programs. To obtain federal approval of its management program, each state is required to define, among other matters:

"Permissible land and water uses, which have a direct and significant impact on coastal waters" (Sec. 920.12)¹

"Geographic areas of particular concern" (Sec. 920.13)¹

"Designation of priority uses within specific geographic areas throughout the coastal zone" (Sec. 920.15)¹

The formulation of interim land use and density guidelines under CAFRA by DEP is an integral element of New Jersey's efforts under the federal Coastal Zone Management Act. These planning efforts extend geographically beyond the Coastal Area designated in the CAFRA statute. For the purposes of program development under the federal Coastal Zone Management Act, DEP is engaged in a planning process for the entire coast of New Jersey, from the George Washington Bridge in the Hudson River to Trenton on the Delaware River. These interim land use and density guidelines pertain only, however, to the Coastal Area defined by CAFRA.

1. Part 923, Coastal Zone Management Program Approval Regulations, Federal Register, Thursday, January 9, 1975, Vol. 40, No. 6, Part 1.

SECTION TWO. The Coastal Area

Patterns of Environment, Economy and Development

Synopsis

This section examines the land and water resources of the Coastal Area, with particular attention to environmentally-sensitive features. Primary economic characteristics of the Area are then discussed. The patterns of man-made physical development and their densities are described, and permit applications submitted under CAFRA are analyzed as indicative of present development pressures and characteristics. Principal features of the Area may be seen on Maps 2-5.

I. The Coastal Counties

The Coastal Area delineated under CAFRA appears on Map 1. It extends from the Raritan Bay east to Sandy Hook, south to Cape May Point and north and west up the Delaware estuary almost to the Memorial Bridge. Total land area is 1,376 square miles. The coastline is 273 miles in length with 126 miles along the Atlantic, and 147 along Delaware Bay. Inland the CAFRA boundary ranges from a few thousand feet from the ocean to as much as 24 miles around stream valleys in the central and southern shore. It is defined mainly by major roads, such as the Garden State Parkway and Route 55, and natural features such as stream valleys. A small segment of Cape May County around its airport has been held out of CAFRA by the legislation. CAFRA's jurisdiction also extends to the three mile territorial limit in the ocean and to the New York and Delaware boundaries in the bays.

Eight of New Jersey's 21 counties are represented in the Area, including parts of Middlesex, Monmouth, Ocean, Burlington, Atlantic, Cape May, Cumberland and Salem. A total of 126 municipalities are wholly or partially within the Area.

A. Land Area

Portions of each county within the Area vary considerably; from 1.6 square miles in Middlesex (less than 1 percent) to 245.8 square miles in Cape May (over 93 percent). Ocean County has the largest amount of land within the CAFRA boundaries, 363.6 square miles. Total county land areas and portions within the Coastal Area are depicted below.

Table 1
Land Area of Counties Within the Coastal Area

<u>County</u>	<u>Total Land Area in Sq. Miles</u>	<u>Land in Coastal Area in Sq. Miles</u>	<u>Percent of County in Coastal Area</u>
Middlesex	477	1.6	0.03
Monmouth	471	163.3	34.7
Ocean	637	363.6	57.1
Burlington	818	127.8	15.6
Atlantic	567	207.7	36.6
Cape May	263	245.8	93.5
Cumberland	502	186.0	37.1
Salem	<u>347</u>	<u>80.3</u>	<u>23.1</u>
	4,082	1,376.1	33.7

Source: Department of Environmental Protection

Clearly, the CAFRA legislation will have different implications for the different counties, by virtue of the land area affected.

B. Population

As of 1974, the permanent year-round population of the Coastal Area is estimated at 743,000, an increase of 8.1 percent over the 1970 population of 688,000.* During the summer months, year-round population is expanded considerably as tourists, seasonal residents, and day-trip visitors come to the ocean and bay resorts and other recreational attractions.**

As with the land area, the magnitude and proportion of each county's year-round population residing in the Coastal Area differs considerably. In effect, Middlesex (1974 population 604,400) and Burlington (1974 population 324,100) have very few people within the Coastal Area; Middlesex about 1,000 and Burlington about 1,500. Table 2 indicates the distribution and percentages involved for those counties which make up the principal population base of the Coastal Area.

Table 2
Estimated 1974 Year-Round Population
of Principal Counties Within Coastal Area

<u>County</u>	<u>Est. 1974 Population</u> <u>(in 000)</u>	<u>Est. 1974 Population</u> <u>Within Coastal Area</u> <u>(in 000)</u>	<u>Percent of County Pop.</u> <u>Within Coastal Area</u>
Monmouth	479.9	259.6	54.1
Ocean	257.8 (275.0)***	229.3	89.0
Atlantic	180.5	146.1	80.9
Cape May	63.4 (68.1)***	60.6	95.7
Cumberland	128.4	44.7	34.8
Salem	63.6	2.6	4.1

Source: Estimated 1974 County Population, Department of Labor and Industry
See Section Three.

Estimated 1974 County Population within CAFRA: Rivkin Associates,
based on DLI estimates above.

Estimates of the actual population within the Coastal Area were made by taking the total population of those municipalities entirely within CAFRA boundaries and adding the total population of municipalities more than 50 percent of whose land area are within the boundaries. In this sense, the 743,000 figure may be a slight overestimate for the counties listed above, but--when discounted for the Middlesex and Burlington figures that had been excluded--is probably reasonable as an overall Area-wide estimate.

*See Section Three for detailed population analysis.

**Cape May County estimates its 1975 summer population at 580,000, about 8 times year-round population. Comparable figures for other counties are not available, although Ocean County uses a 10 to 1 multiplier for its ocean-front communities.

***Figures in parentheses represent estimates by the Ocean and Cape May County Planning Boards which differ from those of DLI. DLI figures are utilized here for consistency, and discrepancies should be corrected in the context of detailed analysis for the 1977 management strategy.

C. Sub-Areas of the Coastal Area

One way of examining the Coastal Area is through identifying various "Sub-Areas" which have certain distinctive development patterns and environmental features. There appear to be four such Sub-Areas, delineated according to county boundaries. They are depicted on Maps 2,3,4 and 5 and are discussed in subsequent sections of this report. The four Sub-Areas are:

1. The North Shore: including portions of Middlesex and Monmouth Counties. This Sub-Area is almost entirely developed, as both a year-round and resort area. It is the smallest within the Coastal Area (165 square miles). Population was estimated at 260,000 in 1974, a 1.5 percent increase over 1970.

2. The Central Shore: including portions of Ocean County. This Sub-Area is the most rapidly developing in the Coastal Area, principally as a fringe suburb of the northern New Jersey-New York Metropolitan Region. It also includes several resort and retirement communities, and considerable amounts of wetlands, pine barrens, and other undeveloped areas. Its population of 229,000 represented a 23.8 percent growth over 1970.

3. The Southern Shore: including portions of Burlington, Atlantic, and Cape May Counties. This is the primary resort and recreation section of the Area, and also includes retirement communities. Although it includes Atlantic City, Cape May City and numerous other recreation-oriented communities, the Sub-Area is largely undeveloped. Its wetlands are extensive. It comprises 581 square miles. The 1974 population was 207,000, a growth of one percent over 1970.

4. The Delaware Bay: including portions of Salem and Cumberland Counties. This part of the Coastal Area is the most remote in relation to metropolitan centers. Its area of 267 square miles is largely wetlands and agricultural land. Population was only 47,000 in 1974, an increase of one percent over 1970.

II. The Coastal Environment

The natural physical environment of the Coastal Area is the setting for the communities, economic activities, and social forces which in turn create further demands on land and water use that the guidelines must address. In establishing CAFRA, the legislature identified those key natural features requiring extraordinary protective measures.

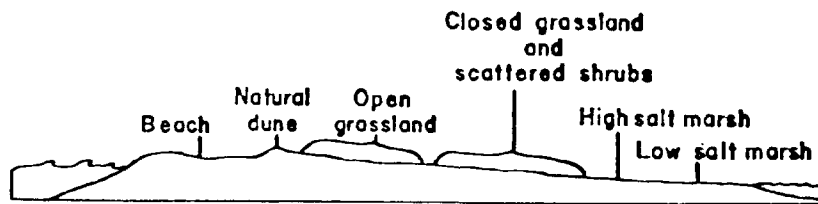
The Legislature finds and declares that New Jersey's bays, harbors, sounds, wetlands, inlets, and tidal portions of fresh, saline or partially saline streams and tributaries and their adjoining upland fastland drainage area nets, channels, estuaries, barrier beaches, near shore waters and intertidal areas together constitute an exceptional, unique, irreplaceable and delicately balanced physical, chemical and biologically acting and interacting natural environmental resource called the coastal area....(Sec. 2.)

A. Primary Natural Features*

The environmental inventory submitted by DEP on September 15, 1975 dealt extensively with these and other natural features of the Coastal Area. Rather than recapitulate the inventory, we highlight below the primary characteristics which make the Coastal Area of statewide concern.

Geologically the Coastal Area is part of the outer Coastal Plains Province, with predominantly sandy soils. In the Northern Shore, the coastal plain extends directly to Raritan Bay and the Atlantic Ocean --except for the beach formation of Sandy Hook which reaches four miles from Northern Monmouth County into the Bay and Ocean. Beaches extend along the mainland south along Monmouth County to Point Pleasant, from which a chain of natural barrier islands stretches to Cape May Point. West of the barrier islands are bays and inlets (through which is the intra-coastal waterway), estuarine areas, salt marshes or "wetlands" of varying extent and then the more stable upland soils upon which most agricultural and interior development has taken place. The barrier islands range in width from several hundred yards to over a mile, and range in length from three to twenty-four miles.

Below is a sketch depicting the basic form of the barrier island.



Source: Halvorson, W.L. and C.G. Dawson. Coastal vegetation, p. 9-1 to 9-92. S. Saila (ed.) "Coastal and Offshore Environmental Inventory Cape Hatteras to Nantucket Shoals." Univ. of Rhode Island, Kingston, 1973.

North of Cape May Point, in the Delaware Bay, the beach formations are replaced by tidal wetlands which extend north and west for the remainder of the Coastal Area.

Wetlands may be found in varying degrees throughout the Coastal Area. DEP estimates over 250,000 acres regulated under the Wetlands Act. During the 1950's and 1960's, prior to passage of that Act, about 25 percent of the Area's wetlands were filled or otherwise lost by construction of residential lagoon developments and commercial activities.

*See Maps 2-5 and explanation of features depicted in Section Six.

This beach, bay and wetlands complex is located along the Atlantic Flyway and is annually the home of millions of migratory birds. Over 50 varieties of waterfowl may be found. In addition, the coastal wetlands and shoal water provide spawning and nursery areas for fish and shellfish. Approximately 395,000 acres of estuary waters are suitable for shellfish harvesting. However, about one-fourth (100,000 acres) are either restricted or condemned because of high bacteriological counts.

The basic sensitivity of the beach, bay and wetlands complex to both natural and man-made forces has been well depicted by Ian McHarg:

...the sand dune is a very recent formation. It will change its configuration in response to autumn hurricanes and winter storms and will sometimes be breached--examination of old air photographs shows quite different water channels and land formations. During storms the bay is likely to fill and flood the bayshore and trough. In severe winter storms the sea may cross over the entire sandbar. The knowledge that the New Jersey Shore is not a certain land mass...is of some importance. It is continuously involved in a contest with the sea; its shape is dynamic. Its relative stability is dependent upon the anchoring vegetation. This involves several convergent factors. The first of these is groundwater. If the use of shallow wells lowers groundwater below a critical level, the stabilizing plants will die. On the other hand, if by the building of groins or any other tangential construction the littoral drift is arrested, the source of sand to supplement the dunes will be denied....

...It is not well known that estuaries and bayshore environments are among the most productive in the world, exceeding those better known examples of rice paddies and sugarcane farms. It is in these nutrient rich locations that the infantile stage of most of the important fish takes place and where dwell the most valuable shellfish. They are the breeding grounds and homes of the most important wildfowl...the marshes and bays are among the most productive areas we have.

...If....the eelgrass flats on either side of the bayshore are filled, it is clear that the capacity of the bay to contain water will be reduced. We can assume that winter storms and hurricanes will continue with their normal frequency, but the water storage capacity of the lagoon will have been diminished. The water will then occupy the area which it requires, inevitably covering the prior area now occupied by building. ¹

1. Ian McHarg: Design With Nature, The Natural History Press, Garden City, 1969, pp. 12-14.

Other, and related, natural features may also be found in the Coastal Area. Several rivers which originate outside the region flow through the Area to the Atlantic and the Delaware Bay. Their estuaries and portions of their stream corridors are within the CAFRA boundaries. From north to south and west these are: the Navesink and the Manasquan in the Northern Shore; the Toms River in the Central Shore; the Mullica and Great Egg Harbor in the Southern Shore; and the Maurice, Cohansey, and Salem in the Delaware Bay Sub-Area.

The Coastal Area also includes uplands. Much of these are undeveloped and covered by forests (particularly in Ocean and Atlantic Counties) termed the "pine barrens," which extend deep into central New Jersey beyond the CAFRA boundaries. While these forests include oak, holly and other species as well, among the most important and "endangered" by overcutting and development are White Cedar stands. These may be found primarily in Ocean, Atlantic, and Cape May Counties. In addition to their commercial importance, the White Cedar stands serve important ecological functions:

The dense cedar swamps of southern New Jersey are excellent deer wintering areas providing quality cover and food...White Cedar areas serve as habitat for a number of rare and endangered species of plants and animals of New Jersey. Such rare plants as the Broom Crowberry, Sand Myrtle, Turkey Beard, and eight uncommon varieties of orchids have been reported by the Committee to Preserve Cedar Creek (1975) in certain stands...White Cedar stands can cause modification of their environment, a "micro-climate" effect. These trees transpire water into the atmosphere, cooling hot summer air and also protect against soil freezing....Cedar swamps also impede the flow of storm water run-off, thus smoothing out abrupt changes in stream flow and flooding....¹

Forty percent of the area within CAFRA boundaries is covered by forests.

In 1973, the Report of the Blueprint Commission on the Future of New Jersey Agriculture urged the preservation of prime farmlands in the state. Although agricultural production has dropped and much prime farmland has been taken over by development (See II B.3 below) there is substantial Class I and Class II soil in the Coastal Area, particularly in the Southern Shore and the Delaware Bay Sub-Areas. These are deep, nearly level, well drained sandy loams and fine sandy, gravelly sandy and sandy loams. Much of these soils not now in farming have been overgrown with vegetation and contribute to the open, rural character of southern portions of the Area.

In general the coastal plain and barrier islands are flat, rising

1. Richard A. Kantor: "The Value of Atlantic White-Cedar, *chamaecyparis thyodes*, to New Jersey," Department of Environmental Protection, 1976, pp. 4-6.

only a few feet above sea level at the highest points. The few exceptions may be found in the northern portion of Monmouth County (particularly Atlantic Highlands) where steep hills exist (still largely undeveloped, but a subject of much recent controversy in respect to high-rise construction) and slopes of more than 15 percent may be found.

Rainfall in the Coastal Area averages about 4 inches monthly over the year. Because of the predominantly sandy soil, the entire region functions essentially as a large aquifer recharge area--making the question of salt water intrusion due to possible depletion of ground water a significant one in many sections of the coast, and a limiting factor on the use of deep wells in development.

B. Flooding

The coast is low-lying and has extensive areas where land and water interact on a continual basis. Flooding from storms and hurricanes is a constant danger, making the position of intensively developed barrier beach communities a precarious one and adding further weight to restraint of wetlands development. Practically all of the shore communities have recently had to comply with building standards established by the U.S. Department of Housing and Urban Development in order to become eligible for flood insurance.* But much existing development cannot be reconstructed to meet the standards. McHarg has depicted one of these recurrent disasters.

From the fifth to the eighth of March 1962, there came retribution. A violent storm lashed the entire northeast coast... For three days 60-mile-an-hour winds shipped the high spring tides across a thousand miles of ocean. Four-foot waves pounded the shore, breached the dunes and filled the bay, which spilled across the islands back to the ocean. When the storm subsided, the extent of the disaster was clear. Three days of storm had produced eighty million dollars worth of damage, twenty-four hundred houses destroyed or damaged beyond repair, eighty-three hundred houses partially damaged, several people killed and many injured in New Jersey alone. Fires subsequently added to this destruction; roads were destroyed, as were utilities...¹

Areas which are within the 100-year flood line, as mapped by the U.S. Geological Survey, are included among the sensitive features depicted on Maps 2-5. Small section maps show the 100-year flood areas on a more detailed basis.**

*Most particularly, maintaining the first floor of structures above the 100-year flood line.

**These are generalized data. A more detailed flood area mapping program is now underway through the Department of Environmental Protection.

1. McHarg, Op. Cit., p. 22.

C. Public Open Space

Public ownership of environmentally sensitive areas is perhaps the most direct means of protecting their ecological character and establishing an appropriate pattern of access and use for the public-at-large. A considerable amount of public ownership exists in the Coastal Area--although by no means all of the sensitive land and water area is covered. Table 3 below shows the relative amount of public ownership along 123.8 miles of Atlantic coastline.

Table 3
Ownership of Atlantic Coastline

<u>Owner</u>	<u>Miles</u>	<u>Percent</u>
Private	32.6	26.3
Public-Local	63.0	50.8
Public-State	14.0	11.4
Public-Federal	<u>14.2</u>	<u>11.5</u>
	123.8	100.0

Note: This table is based on data from the U.S. Army Corps of Engineers National Ocean Survey (1971). The total distance does not include certain inlets.

Source: DEP "Environmental Inventory," 1975, p. 11.

Approximately 11 percent of the Atlantic beaches are closed to the public by virtue of private or beach club ownership and restrictions, and additional area that is in one form or another of public ownership may be effectively restricted due to inaccessibility, beach user fees, lack of sanitary facilities, etc. The state owns all riparian lands now or formerly flowed by the mean high tide unless title has been conveyed to another owner by means of a riparian grant. About one-third of the 120.6 mile riparian distance along the Atlantic has been granted by the state (over 50 years ago) to municipal or private parties.

To increase public access to the coast, and particularly to its beaches, the State is pursuing four courses of action. First, public access is a condition of DEP's state aid shore protection grants. Second, public access to and use of beaches is a condition of DEP's CAFRA permits for oceanfront projects which include the creation of so-called "private beaches." Third, the Attorney General is initiating litigation against municipalities that charge unreasonable and inequitable beach fees. Fourth, the Department of the Public Advocate has initiated litigation against private property owners and a municipality over the issue of restricted access across the uplands to the public trust-riparian lands.¹

1. DEP, "Environmental Inventory," 1975, p. 11.

The coastal municipalities operate beaches, often open to the public for a user fee. Under federal management, Sandy Hook is a popular recreation area, part of the Gateway National Recreation Area. The state operates Island Beach State Park for active recreation in Ocean County. A considerable amount of wetlands has been taken by the state and federal governments as wildlife preserve with limited public access. These areas include the Barnegat Bay and Brigantine National Wildlife Refuge in Salem County and several state managed fish and wildlife management areas on wetlands in Delaware Bay. According to recent figures from Ocean County, approximately 62,150 acres are in state and federal recreation ownership in that jurisdiction. Public open space (state, federal, and municipal) is also identified on the maps cited above.

D. Historic Areas

Historic sites are not technically part of the "natural" environment. However, such sites evidence a comparable need for conservation and enhancement. Cape May City is perhaps the best-known and most extensive historic area on the Coast. It includes over 600 examples of late 19th and early 20th century architecture and is on the National Register of Historic Places. Other sites on the Register or currently eligible for inclusion are the Cape May Lighthouse, Absecon Lighthouse in Atlantic County, Barnegat Lighthouse in Ocean County, and Sandy Hook Lighthouse in Monmouth County. Indian and early settlement sites of archaeological interest also exist.

III. Direct Economic Significance of the Coastal Resources

Preservation and enhancement of the Coastal Area's natural resources will have positive value to those economic activities which are directly tied to utilization of these resources. While a complex set of economic activities may be found in the region, three are a direct outgrowth of the Coastal Environment: Recreation and Tourism; Fisheries; and Agriculture.

A. Recreation and Tourism

The following citations from DEP's "Environmental Inventory" succinctly depict the significance of recreation and tourism to the coast and vice-versa:

...The largest industry in the coastal area, and the second largest in all of New Jersey, is the recreation-resort industry which generates approximately \$3 billion annually in goods and services. More than twice as many people are employed in this industry in the summer, than in the winter.

...Much of the recreation is water oriented. Currently 350,000 boats are owned by New Jersey residents. Over 16,000 clamming licenses were issued this year. More than 40,000 waterfowl hunters and 600,000 crabbers use the coastal area as a recreational resource. The hunters alone spend nearly \$5 million annually.

...Two of the most popular shore parks are Island Beach State Park and Gateway National Park at Sandy Hook. These facilities combined receive over 1,350,000 visitors annually.

...As of 1970, over 85,000 homes were built to accommodate seasonal residents. Roughly one-half of the housing units in Cape May County consist of such vacation homes.¹

The economy of communities such as Atlantic City, Asbury Park, Cape May City, Wildwood, and Ocean City is heavily dependent on the tourism industry; and these shore communities provide among the widest variety of commercial and public recreational activities in the United States.

As the demands for seasonal public access to recreation areas have grown, privately-owned camp grounds have become an increasingly important land use, particularly on former agricultural land in Atlantic and Cape May Counties.

The Department of the Interior commissioned a special tourism and recreation survey as part of the OCS environmental impact statement recently released. The study examined recent economic aspects of tourism in Monmouth, Ocean, Atlantic, and Cape May Counties in relationship to coastal counties in New York, Delaware, Maryland, and Virginia. Among that study's findings were:

Total 1972 business receipts (in association with tourism) were highest in the four New Jersey coastal counties and Worcester County, Maryland... The highest totals were in Atlantic and Cape May Counties with \$59 million and \$33 million in receipts, respectively. Worcester County, Maryland, where the Ocean City resorts are located, had the highest total for any of the counties outside New Jersey with almost \$15 million.

Only Atlantic, Cape May and Monmouth Counties had personal income (related to tourism) estimates of more than \$5 million in 1972.

Four counties--Atlantic, Cape May, Monmouth, and Worcester--had primary tourism-generated employment totals in excess of one thousand persons.

In only three counties--Atlantic, Cape May and Worcester was the percentage (of tourism-generated employment) greater than 10 percent. Atlantic County had the greatest number of tourism-generated employment with almost 9,000 persons. On a percentage basis, however, tourism activity was most significant in Cape May County where over two fifths of the employment was tourism-generated.²

1. DEP, Op. Cit., p. 6

2. U.S. Travel Data Center: Travel Economic Impact Model, Final Demonstration Report, prepared for Bureau of Land Management, 1975, 1975, as reported in Draft Environmental Statement for the 1976 Outer Continental Shelf Oil and Gas Lease Sale Offshore the Mid-Atlantic States, U.S. Department of the Interior, 1975, Vol. 1, p. 413-414, 418, hereafter cited as OCS-EIS.

The attraction of the Coastal Area for recreation and tourism, combined with increasing accessibility to the New York and Philadelphia Metropolitan regions have stimulated the growth of the Area for year-round residential and retirement communities--a secondary economic effect of the coastal resources to be discussed in Sec. IV below.

B. Fisheries

The Coastal Area is a center both for commercial and sport fishing. According to the Environmental Inventory, New Jersey ranks 7th nationally in tonnage of commercial fish landings. In 1973, nearly 210 million pounds of finfish and shellfish worth over \$18 million were landed. Species are abundant and include manhaden, striped bass, fluke, flounder, porgy as well as shellfish, lobsters, scallops, clams and crabs. In 1974, the state had almost 3,000 full or part-time commercial fishermen.¹

In respect to sport fishing, the OCS Environmental Impact Statement reports:

Of the more than 8 million persons that fished in the Mid-Atlantic States during that period (June 1973 to June 1974) 34 percent fished in New Jersey and 33 percent in New York...New Jersey entertained the greatest number of non-resident fishermen with almost 1.3 million visitors (or 46 percent of its total).²

DEP staff estimate that about 1 million of the 2.5 million fishermen in New Jersey waters were from out-of-state, and that total annual expenditures on the sport are about \$350 million.

The fishing industry in the Coastal Area is threatened by poor water quality due to ocean waste disposal and urban runoff (particularly around Sandy Hook) as well as the high bacteriological count in certain shellfish areas. Over-fishing is another activity that threatens certain species.

C. Agriculture

New Jersey ranks second nationally in cultivated blueberry production and third in production of both tomatoes and cranberries. Each of these crops is a significant product of the Coastal Area, with the majority being processed in the southern part. Peas, vegetables, sweet potatoes, and some fruits are major crops of Salem and Cumberland Counties along with eggs and poultry production. Burlington County is the blueberry and cranberry center, although some such production still remains in Ocean County. By and large, however, agriculture is a declining activity in the Coastal Area as well as in the state. Table 4 below

1. As reported in OCS-EIS, Vol. 1, p. 425.

2. Ibid., p. 410.

shows the percentage change in cash receipts from agriculture for the coastal counties between 1960 and 1970. Only Salem County has increased, but at a rate far less than inflation.

Table 4
Agricultural Income in Coastal Area

<u>County</u>	<u>Percent Change in Cash Receipts 1960-70</u>	<u>Share of State</u>
Ocean	-66.1	1.8
Atlantic	-37.5	4.6
Monmouth	-34.9	8.3
Cumberland	-34.9	7.9
Salem	+3.9	8.7
Cape May	NA	NA

Source: New Jersey Trends, edited by Thomas P. Norman, Esq., Institute for Environmental Studies, Rutgers, 1974.

The reasons for the decline stem from the following:

1. a rise in land value, stemming from
2. demand for inland area housing especially in Monmouth, Ocean and Cumberland Counties and
3. the high property tax burden, which doubled from 1960 to 1970. New Jersey has the highest agricultural rates per acre in the nation. Property taxes averaged 37 percent of net farm income in 1971.

Recent state-wide information available to the New Jersey Department of Agriculture indicates some moderation in the downward trend--although not necessarily in the Coastal Area. Cash receipts from agriculture for the state fell from \$295.5 million in 1960 to \$242.5 million in 1970, but rose to \$350.3 million in 1974. During the 1960-70 period land was taken out of farming at the rate of 40,000 acres per year. Between 1970 and 1976 the rate of decrease fell to 5,800 acres annually.

Should agricultural activity further diminish in the Coastal Area, some consideration may be merited to special conservation efforts for the most productive agricultural land.

IV. Other Economic Features of the Coastal Area With Land Use Impact

Recreation/tourism, fishing, and agriculture are economic activities which stem directly from the natural resource base of the Coastal Area. They account only partially for the Area's economy, and only partially for the pattern of man-made physical development as it exists today.

A. Shifts from Seasonal to Year-Round Residential and Retirement Housing

About 55,000 permanent residents were added to the Coastal Area between 1970 and 1974. This population influx signals a shift from a predominantly "seasonal" economy in much of the Coastal Area to one concerned with construction and servicing for a year-round population base. Origins of the shifts go back two decades or more, but picked up momentum during the early 1970's. They are not uniform throughout the Coastal Area. It is Monmouth and Ocean Counties where the year-round, predominantly commuting, family population has settled; and Ocean, Atlantic, and Cape May where retirement communities have grown. In addition to new construction, there has been a significant amount of conversion of seasonal housing units both for year-round population and individual retirees.

Clearly the attractiveness of the Coastal Area environment and accessibility to the beaches, bays, and recreational attractions have much to do with these changes. However, employment shifts in the New York-New Jersey metropolitan region and the accessibility of the Coastal Area by major highways to these employment concentrations have been equally important considerations.

In viewing past population and employment changes within the tri-state New York-New Jersey and Connecticut urban region, the Regional Plan Association¹ sees an intensification of the changes which have recently affected the Coastal Area. These include declines in population and employment within the Urban Core (New York City and Hudson County, New Jersey), relative stability in the Inner Ring (Essex and Union Counties) and growth in the Intermediate Ring (including Middlesex, Mercer, and Monmouth Counties) and the Outer Ring (including Ocean County). As employment has grown in the Intermediate Ring, particularly Middlesex County and along the New Jersey Turnpike and the Garden State Parkway, this has made commuting from the shore areas of Monmouth and Ocean Counties quite feasible.

The Garden State Parkway and Route 9 (north-south) and major east-west roads (I-195, Routes 37-70, Route 33, and Route 35) have made

1. Regional Plan Association, "The State of the Region," Regional Plan News, March 1975, No. 97.

Coastal Area residential locations readily accessible to employment centers in the western portions of Monmouth and Ocean Counties, the Newark area segment of the New York metropolitan region, and to Mercer County.

Given that accessibility, the attractiveness of the coastal environment, and relatively cheap buildable sites, considerable development for year-round residence has taken place in Monmouth and Ocean Counties during recent years. Due to economic conditions and to environmental controls (sewer moratoria in particular), this growth has slowed since 1974. However, improving economic conditions and the anticipated availability of new sewer service will make the pressure for year-round and retirement housing again a development force in the Coastal Area during the remainder of the decade.

Tables 5 and 6 below are indicative of the shifts in seasonal housing as a component of the housing supply over the 1940-1970 period. They examine figures for Monmouth, Ocean, Atlantic and Cape May Counties. Two other counties--Salem and Cumberland in the Delaware Bay Sub-Area--have little population within the CAFRA boundaries and negligible seasonal housing. Burlington, with few people within the Coastal Area is also not considered.

About 85 percent of the seasonal units are within the Coastal Area. While no change was evidenced in the total number of units during the decade of the 1960's (a gain of exactly six in ten years), significant shifts are evident from county to county. Monmouth County lost 4,800 units, a drop of 24.5 percent in 10 years (indicative of conversions). Ocean County gained 3,500 units, increasing 9.1 percent. The remaining gain of 1,300 was split between Atlantic and Cape May Counties.

Table 5
Seasonal Housing Units
(in 000)

	<u>1940</u>	<u>1950</u>	<u>1960</u>	<u>1970</u>	<u>Change</u> <u>1960-1970</u>
Monmouth	19.8	18.4	19.5	14.7	-24.5%
Ocean	13.5	20.7	38.4	41.9	+ 9.1
Atlantic	8.6	7.3	12.4	13.1	+ 5.8
Cape May	16.4	20.5	31.4	32.0	+ 1.7
Total--Four					
Counties	58.3	67.0	101.7	101.7	0.0%

Source: Cape May Planning Board

Of greater value in assessing the relative importance of seasonal housing are the percentage shifts in the total housing supply for each county indicated below.

Table 6
Percentage of Seasonal Housing, by County

	<u>1940</u>	<u>1950</u>	<u>1960</u>	<u>1970</u>
Monmouth	31.2	22.3	16.8	9.8
Ocean	55.2	53.8	53.7	38.0
Atlantic	19.9	15.0	19.2	17.8
Cape May	65.6	63.6	66.3	60.1
Total--Four				
Counties	37.3	33.2	34.0	26.3

Source: Cape May Planning Board

Since 1940, the ratio of seasonal to year-round housing has decreased steadily in Monmouth County. Ocean County's percentage of seasonal units held at over 50 percent through 1960, but decreased sharply thereafter due to the influx of new year-round population. In Atlantic County, seasonal housing has remained between 15 and 20 percent of the total. In Cape May, the figure has consistently been over 60 percent, with the decrease between 1960 and 1970 probably due to its increasing popularity as a year-round retirement area.

Relative accessibility to the metropolitan regions has also been important to the growth of retirement housing. However, retirees have been attracted to the Coastal Area especially because of:

Planned communities built especially for middle-and-lower-middle income retired people with health, shopping and cultural services;

Relatively reasonable-cost housing;

Accessibility to the beach and bay recreation areas;

Relatively little congestion, crime, and environmental problems.

Ocean County in 1974 had the largest concentration of retirement communities on the eastern seaboard outside of Florida. A total of 16,000 units were built and occupied, with another 14,500 planned for development.

As Table 7 below indicates, Cape May, Atlantic and Ocean Counties ranked 1, 2 and 3 in the state in 1970 in percentage of residents 65 years of age or over. Cape May had nearly 20 percent of its population in this range, twice the state average of 9.7 percent. In fact, only Salem, of the principal coastal counties was below the state average, as shown below.

Table 7
Elderly Population, 1970

<u>County</u>	<u>Percent 65 or Over--1970</u>
Cape May	19.9
Atlantic	16.2
Ocean	15.8
Cumberland	10.0
Monmouth	9.8
STATE	9.7
Salem	9.3

Source: U.S. Census

The influx and continued presence of elderly has significance, both to the coastal economy and to the pattern of health and social facilities required by its residents.

B. Support Activities

The growth in year-round and retirement population has contributed to stabilizing the initially seasonal retail and service activity. In the Northern and Central Shore, particularly, new retail and service activity has developed to support the year-round population. In Ocean County, for example, trade and services were the fastest growing segment of the local employment base over the 1960-1970 decade. Employment in trade grew by 9,300 people or 182 percent and services by 3,400 or 172 percent.¹ One regional shopping center has operated within the CAFRA portion of Monmouth County (Eatontown Borough) for about 10 years, and a second, major center is now under construction near Toms River in Ocean County. The regional facilities, and other individual or clustered installations along the major roads (particularly Route 9) have contributed to some decline in older downtown districts within the Area--such as Long Branch, Asbury Park, and Atlantic City.

Much of the retail and allied activity that services the coastal counties is, however, outside of the CAFRA boundaries.

1. Source: Department of Labor and Industry

C. Industry

Industrial development has not been significant within the Coastal Area. New Jersey is a state with a considerable amount of water-oriented industry, both heavy and light, attendant warehousing, and oil refinery capacity oriented towards water access. For the most part, however, these industries have clustered around the western reaches of Raritan Bay and New York Harbor and in the Camden section of the Philadelphia Metropolitan Area near the Delaware River.

There is also a considerable amount of industrial development in the Coastal Counties--but mainly outside of the CAFRA boundaries, and oriented more to the region's highway network. In 1970 Monmouth County had an industrial employment of 21,200 and Ocean County of 4,600. A study of employment potentials prepared by Rutgers University's Center for Policy Research (Modeling State Growth: New Jersey 1980) projected a manufacturing employment increase for Ocean County between 1970 and 1980 of 8,600 (188.9 percent) and for Monmouth County of 16,700 (or 78.5 percent).¹ Based on past locational experience, we surmise that most of that employment growth would--if it actually takes place--be extensions of existing development outside the CAFRA boundaries.

There are some industrial concentrations within CAFRA however. In Ocean County, near Toms River, is the county's largest industrial employer, the Toms River Chemical Company with a work force of about 1,600. Most of the 10,400 industrial employees (1970) of Atlantic County were in the Atlantic City area, primarily in small textile and apparel plants. In Cape May County, there is industrial development around the airport, which has been excluded from the CAFRA jurisdiction.

Cumberland County has considerable glass-making activity at Bridgeton (2,400 employees) and Millville (1,400) where the CAFRA boundary cuts through both cities. Most industrial activity in Cumberland and Salem Counties is outside of the Coastal Area, however.

One aspect of the CAFRA legislation in respect to industry is of particular relevance. Most of the industries over which DEP is given direct permit authority, and which are enumerated in the Act (Section 3c) relate directly to heavy industry of various types and to petrochemical processing. Most of these enumerated industry types, including refineries, are not currently represented by installations within the Coastal Area.

1. James J. Frank and James W. Hughes: Modeling State Growth: New Jersey 1980, Center for Urban Policy Research, Rutgers University, 1973.

D. Military

Military activity is significant in and adjoining the Coastal Area, although installations of major importance are outside the CAFRA boundaries. Within the Area are Fort Monmouth, Earle Naval Ammunition Depot, and the Cape May Coast Guard Station. Outside are Ft. Dix, McGuire Air Force Base, and the Lakehurst Naval Air Station. Of these, Lakehurst has the most significance for the Area. Its employment (approximately 5,600 in 1975 according to the Ocean County Planning Board) makes it the largest employer in Ocean County, and the stream of vehicles during rush hours over congested Route 37 would indicate that a considerable component of the work force is resident within the CAFRA boundaries. Lakehurst has been a growing facility, while others have stabilized or dropped in activity.

E. Energy

Energy production in the Coastal Area today is important. It may be far more important tomorrow, however, due to proposals now under consideration for nuclear generating facilities, offshore oil and gas exploration, and liquid natural gas conversion. (See Section Four.) As of 1976, fossil fuel power plants are located below Tuckahoe at Great Egg Harbor in Atlantic County and in Atlantic City. A nuclear plant is presently operating at Oyster Creek in Ocean County (with a second planned nearby). Two nuclear plants are under construction at Artificial Island in Salem County and a third recently received a CAFRA permit to build. The operating labor force at these installations is relatively small.

F. Commuting in the Coastal Area

While the preceding discussion indicates that considerable economic activity is located within the CAFRA boundaries, the land development pattern depicted below suggests that many of the present Coastal Area residents commute away from the coast to places of employment. However, two distinct patterns of employment dispersion are represented.

One, as represented by the job concentration at Lakehurst, signifies commuting from the Coastal Area to work locations within the Coastal Counties, but outside the CAFRA boundaries. There is no way at present of estimating the magnitude of this movement.

The second, and more readily determined, is commutation outside of the Coastal Counties to work places elsewhere in New Jersey.

Table 8 below depicts the percentage of employed workers in the six principal coastal counties who commuted out of the counties to work in 1970.

Table 8
Commuting in the Principal Coastal Counties

Ocean	32.3%
Monmouth	26.7
Salem	25.8
Cape May	15.8
Atlantic	14.6
Cumberland	12.2

Source: U.S. Census

Table 8 indicates that Ocean, Monmouth, and Salem Counties had the highest proportion. In 1975 the Ocean County Planning Board sponsored a sample survey on commuting which indicated that 42 percent of the population were destined for job locations outside the County.¹ This is consistent with the predominantly residential "bedroom" pattern of recent development in Ocean County.

V. The Patterns of Man-Made Physical Development in the Coastal Area

Maps 2-5 display the development patterns of the Coastal Area in relation to public open space and a composite of certain key environmentally-sensitive features (wetlands, flood prone areas, Class I and II soils, steep slopes, and White Cedar forest areas). The information on these maps is generalized. (See Section VI for description of the data.) Developed areas designated include industrial, commercial, and institutional facilities as well as residential (although residential is the predominant use). Density levels are not indicated. The areas left in white on the maps are neither developed nor covered with any of the selected sensitive features shown. Individual white areas may, nevertheless, have specific development limitations since only the features listed have been recorded here. Maps 2-5 are supplemented by twelve small area maps at a scale of 1:100,000 (Maps 2a-5c) which display each of the sensitive features in greater detail.

A. Transportation

In addition to the coastal environmental features, the nature and timing of transportation connections between the shore and the metropolitan regions have been the key influences on the character of the man-made development patterns.

1. Ocean County Commuter Survey, Ocean County Board of Public Transportation and Ocean County Planning Board, 1975.

Railroad lines between Newark and the Northern Monmouth County communities and between Philadelphia and Atlantic City and Cape May influenced the early development of these sections of the Coastal Area for seasonal use. The Monmouth County line now serves principally for New York area commuters; and limited service still exists in the southern portion of the area connecting to the PATCO Lindenwold Line to Philadelphia.

It is the highways, however, which are the principal transportation spines for development: In addition to commuters and inter-area travel, over 80 percent of seasonal out-of-state visitors use the road access. The primary route is the Garden State Parkway (see maps cited) which traverses the Northern, Central, and Southern Shore. This is a limited access facility, and U.S. 9, which parallels much of its length, is the locus for much of the strip commercial development which characterizes Coastal Area land use.

Route I-195, finished only as far as Route 527 (with a routing planned to connect directly to the Garden State) is a major connector between Ocean County and the Trenton Area.

The maps also show the importance of state east-west and north-south routes which service and provide access to development along the coast. These include:

In the Northern Shore:	Routes 35, 36 and 71
In the Central Shore:	Routes 35, 71, 70, 88, 37 and 72
In the Southern Shore:	Routes 30, 40, 52, 322 and the Atlantic City Expressway

The Delaware Bay region does not have expressway service (except for portions of uncompleted Route 55) and its principal access points are via Routes 47, 77, 49 and a number of county roads.

Some limited public bus service operates. Regular inter-city service links Monmouth, Ocean, and Atlantic County communities with each other and with northern New Jersey and New York. Similar service links the Philadelphia-Camden metropolitan area with Atlantic City shore communities. Cape May County has limited regular inter-city bus service. Some seasonal routes link Trenton with the shore area. Ocean County has proposed a county bus system to serve that rapidly-developing section of the Area. Airports are found at Atlantic City (some scheduled service) and Cape May.

B. Basic Pattern

Important distinctions in basic development pattern exist between the Sub-Areas of the Coastal Area. Map 2 displays the condition in the Northern Shore, the smallest of the Sub-Areas. This section is almost entirely built up--except for Sandy Hook, some wetlands (primarily along Raritan Bay), and the remaining steep slopes of Atlantic Highlands. Relatively little white space, signifying undeveloped land without sensitive environmental features, exists; and this is mainly on the mainland edges of the sub-region.

Map 3 displays the pattern for the Central Shore. With the exception of Island Beach State Park and a few wetland areas south of Barnegat Light, the barrier islands are solidly built up. Inland, the Sub-Area is considerably less developed than the Northern Shore, but with a definite gradation from north to south. In the northern portion of Ocean County (north of Beachwood) development is extensive. It is not solid, but in large and small clusters, extending from major roads --Routes 9, 37, 88, 528--and into areas between the highways. Concentrations occur in Dover, Manchester, Lakewood, and Brick townships and in Point Pleasant, Lakehurst, Island Heights, and Beachwood boroughs. There is a scatteration of development also, and considerable amounts of white undeveloped area, in between the band of gray.

One factor of great environmental importance is revealed on the maps in respect to northern Ocean County and to other areas on the Atlantic shore: that is the scattered construction directly on wetlands and other sensitive environmental features. The flood-prone character of developed areas on the barrier islands is also apparent. These conditions led to the CAFRA legislation and the legislature's intent to restrain growth on the wetlands and barrier islands.

Below Toms River and through Lacey Township in the central portion of Ocean County development is less extensive. Scatteration is evident --leading from Route 9--as well as wetlands removal.

South of Lacey Township there is relatively little inland growth west of the Garden State Parkway. Some development on wetlands has occurred.

Map 4 displays the pattern for the Southern Shore--less extensive still than Ocean County and the Central Shore. With the exception of the National Wildlife Refuge (Brigantine) the barrier islands are largely developed, although open--and environmentally sensitive--land exists between Avalon and Ocean City. Fewer wetlands are built up than in the Central Shore.

A cluster of development exists around Absecon, with a broad band to the south adjoining Routes 9 and 585. Growth nodes are at Cape May Courthouse, Cape May City and around Lower Township, with some small clusters along the southern section of Route 9 and the Garden State Parkway.

The Burlington County section of the Southern Shore is practically undeveloped, with much of the land in public open space.

One striking characteristic of the undeveloped land in the Southern Shore Sub-Area is the degree to which it represents environmentally sensitive features, except in inland portions at the west. This is a Sub-Area where wetlands and Class I and Class II soils are abundant, along with a sizeable amount of White Cedar stands. As with the Central Shore, much of the barrier island development is subject to flooding. Cape May City, as noted previously, is the principal historic district within the Coastal Area.

Map 5 displays the pattern for the Delaware Bay. This is the most undeveloped, and, at the same time, most extensive environmentally-sensitive Sub-Area in the Coastal Area. Development nodes occur only at Millville, Bridgeton, and a few small locations along Route 553 and below Salem.

The Salem and Hope Creek nuclear plant site is at Artificial Island southwest of Salem in Delaware Bay. At the scale of these maps, the site appears wholly as developed area, although room for plant expansion is substantial. Artificial Island represents over 1,000 acres of solid fill, and is several miles from the nearest settlement.

Wetlands and Class I and II soils are the predominant environmental features of the Delaware Bay. Each in its own way has contributed to restraining urban growth in the region and containing it around Bridgeton and Millville. The wetlands extend directly from the bay-shore for some distance inland, with few solid beach areas for recreation. Good soils beyond the wetlands sustain what is still economically important agriculture in both counties.

C. Densities of Development

Development in the Coastal Area is most intensive along the Northern Shore and on the barrier beach islands. Residential development throughout the region is predominantly single-family detached in character; although apartments and townhouses have recently become popular on the beaches as well as inland; and high-rise condominium and hotel growth has taken place in portions of the ocean front.

Generally, development inland from the beaches has considerably lower density, although still mainly single-family detached.

The Department of Community Affairs has compiled a detailed listing of density levels for all communities in the state. This information is compiled by the number of persons per square mile and gives a general indication of the range of densities throughout the Coastal Area. The most intensively developed communities are in the northern sections of CAFRA--in Monmouth and Middlesex Counties, and along the barrier beach islands. As one proceeds down the Coastal Area and inland, the ratio of persons per square mile decreases significantly.

To illustrate this point, the major density characteristics for each county segment are summarized below:*

Monmouth County: About one-third of the 27 CAFRA communities in Monmouth County have densities exceeding 5,000 persons per square mile. Asbury Park and Keansburg, with 11,022 and

*Resort communities evidence much higher density during the season.

10,231 persons per square mile respectively, are the most densely populated. No community here has an overall density of less than 1,441 persons per square mile, indicative of the generally urbanized pattern.

Ocean County: Ocean County densities are considerably lower than in Monmouth. Only one community, Point Pleasant, is developed at what could be considered a high density--4,315 persons per square mile. Seaside Heights, Pt. Pleasant Beach and South Toms River have densities of between 3,000 and 4,000 persons per square mile, and the rest of the communities fall below 3,000. Inland townships, such as Lacey and Union have densities of around 50 persons per square mile or less, indicating the presence of much still open land. The barrier beach communities in Ocean County (e.g., Seaside Heights, Seaside Park, Ship Bottom) are less densely populated than those in Atlantic County, but at about the same level of density as those in Cape May.

Atlantic County: Communities on the barrier beach island of Atlantic City are the most intensively developed in Atlantic County. These include: Margate City (7,554 persons per square mile); Ventnor City (4,945); Longport (4,083); and Atlantic City (4,042). The remaining 12 municipalities in Atlantic County are considerably less, with densities ranging from 31 persons per square mile (Corbin City) to 2,400 (Pleasantville). This follows the same pattern as Ocean and Cape May Counties, where inland development is much more rural and suburban in nature.

Cape May County: Densities of the municipalities in Cape May County are lower still than any of the northern counties. The Wildwoods--Wildwood, Wildwood Crest and North Wildwood--are the most intensively developed, with ranges between 2,302 persons per square mile to 3,669. Ocean City has a density of 1,813, and Cape May 1,729. Inland municipalities are more sparsely developed, all below 1,000 persons per square mile.

Salem and Cumberland Counties: Following the same diminishing trend, only Bridgeton (Cumberland County) has a relatively high density--of 3,143 persons per square mile. All other communities within CAFRA show fewer than 500 persons per square mile. This is significantly lower than Monmouth County or the barrier beach communities.

In terms of recent development, represented by permit requests to CAFRA, single-family detached housing continues to predominate in the region. Density levels (based on a sample of CAFRA permit requests) for single-family detached range from under 1 unit per acre to as high as 8 units per acre, falling mostly under 4 units per acre. Townhouse projects range between 5 and 8 units per acre, and apartments (including both garden and high-rise) from 8 to about 12 units per acre.

D. CAFRA Applications as Indicative of Patterns, Density, and Short-Term Pressure

CAFRA permit applications since 1973 can illuminate the nature of recent growth in the Coastal Area, and the kind of land use and density characteristics to anticipate in the short run.

Below is an analysis of the 157 applications received and processed by April 23, 1976. These data underscore both residential and recreation/tourism-oriented development as the principal generators of land use demand. They point up Ocean County as the primary locus of recent and anticipated growth. These data also indicate that single-family detached housing continues to predominate, with emergence of some interest in townhouses and multi-family units.

As of April 23, 1976, 20 applications had been cancelled, 7 denied, 93 approved and the remaining 37 were being processed and reviewed. Most of these applications were for housing developments of various sizes and types. Of the total permits received, 100 were for residential development (including hotels, motels, campgrounds, as well as housing); 40 for sewer projects; 2 for energy; 8 for industrial; and 7 miscellaneous. Over half (179) the applications came from Ocean County; 32 from Cape May; and 22 from Atlantic and 19 from Monmouth County. The remaining 5 were scattered among Middlesex, Cumberland and Salem Counties.

1. Residences. The applications received for residential development alone represented a total of 14,094 dwelling units. Of these, 1,518 units were subsequently cancelled and 1,184 denied. A total of 11,392 housing units had been approved or were pending approval. About 76 percent represent single-family detached dwellings. A breakdown of these units by housing type follows:

Table 9

Dwelling Units by Housing Type Under CAFRA, April 23, 1976

	<u>Units Approved</u>	<u>Units Pending</u>	<u>Total Units</u>	<u>Percent</u>
Single-Family	6,128	2,453	8,581	75.3
Townhouses	1,526	163	1,689	14.8
Apartments	<u>760</u>	<u>362</u>	<u>1,122</u>	<u>9.9</u>
TOTAL	8,414	2,978	11,392	100.0

Ocean County is clearly the most dynamic market area for both single-family and townhouse development. Over 75 percent (5,161) of all single-family residences approved and 85 percent (1,299) of all townhouse approved units were located in Ocean County. A summary of the residential approvals by geographic area is shown below.

Table 10Location of Approved Residential Units Under CAFRA, Through April 23, 1976

<u>County</u>	<u>Single Family</u>	<u>Townhouses</u>	<u>Apartments</u>	<u>Total</u>
Monmouth	148	72	78	298
Ocean	5,161	1,299	144	6,604
Atlantic	82	85	514	681
Cape May	<u>737</u>	<u>70</u>	<u>24</u>	<u>831</u>
TOTAL	6,128	1,526	760	8,414

(Note: There were no approvals for residential units in Middlesex, Burlington, Cumberland or Salem Counties.)

Source: Department of Environmental Protection

While Ocean County accounted for the vast majority of approvals in single-family and townhouse units, Atlantic County led the small apartment market with 67 percent (514) out of 760 units approved, followed by Ocean County.

Applications for an additional 2,978 residential dwelling units were pending approval. The majority (84 percent) of these were located in Ocean County; with 6.5 percent in Cape May County, 6.2 percent in Monmouth County and 3 percent in Atlantic County. Of the total units pending, 86 percent were in single-family.

Table 11Location of Pending Residential Units Under CAFRA, April 23, 1976

<u>County</u>	<u>Single Family</u>	<u>Townhouse</u>	<u>Apartment</u>	<u>Total</u>
Monmouth	38	0	150	188
Ocean	2,306	163	68	2,537
Atlantic	93	0	0	93
Cape May	<u>541</u>	<u>0</u>	<u>144</u>	<u>198</u>
TOTAL	2,491	163	362	3,016

Note: There were no pending applications for residential units in Middlesex, Burlington or Cumberland Counties.

While some of the submitted units are for seasonal dwellings, most presumably represent year-round accommodations.

2. Resort/Residential. Applications for a total of 1,375 hotel/motel rooms, primarily oriented towards the beach areas, had been approved. They include a Hilton Hotel in Atlantic City, and facilities in Cape May and Ocean Counties. A total of 617 camp sites (Cape May and Atlantic) had been approved and 200 denied.

3. Other Facilities. Applications for sewer extensions accounted for more than half the additional facilities requests. Twenty-four of the 39 sewer applications were from Ocean County; 7 from Monmouth; and 7 scattered among the other counties. Included were one application for a pumping station in Atlantic County and a 500,000 gallon water storage tank and wastewater treatment plant in Ocean County. An onshore nuclear power plant was recently approved (Hope Creek in Salem County) and an application for an offshore nuclear generating station (Atlantic County) is pending.

In addition, applications had been received for 8 industrial projects (3 in Ocean County) and for a shopping center (Atlantic County). There was one application for a marina (Monmouth County); one for a correctional center (Cape May); one for a senior citizens center (Cape May).

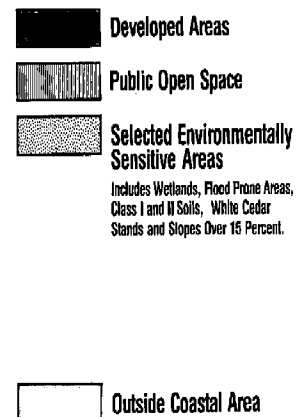
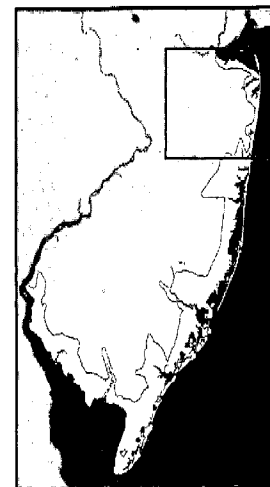
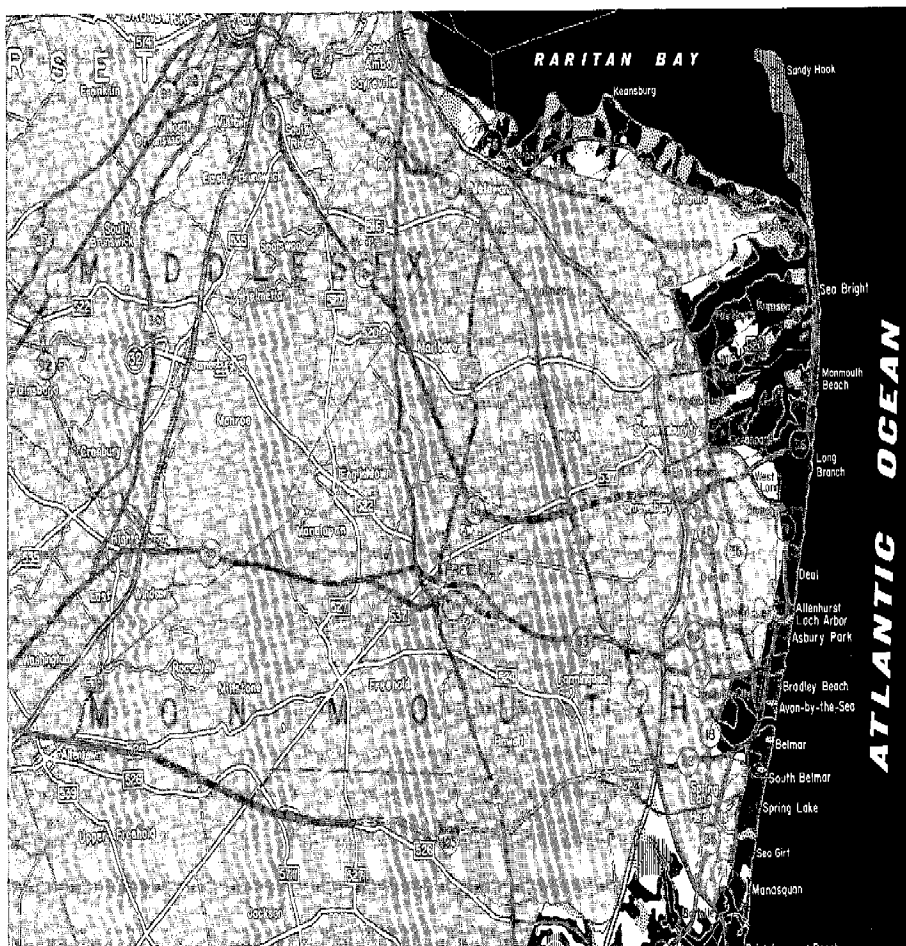
All in all, low density housing and community support facilities appear to be the primary generator of land-use demand, at least in regard to the short-term future.

MAP 2

THE COASTAL AREA OF NEW JERSEY

Developed and Selected
Environmentally Sensitive Areas

**NORTHERN SHORE
MIDDLESEX AND MONMOUTH
COUNTIES**



Scale 1:336,364

INTERIM LAND USE AND DENSITY GUIDELINES
STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF COASTAL ZONE MANAGEMENT

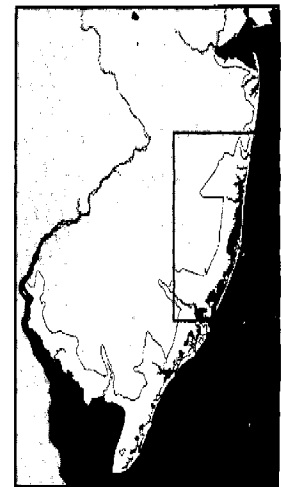
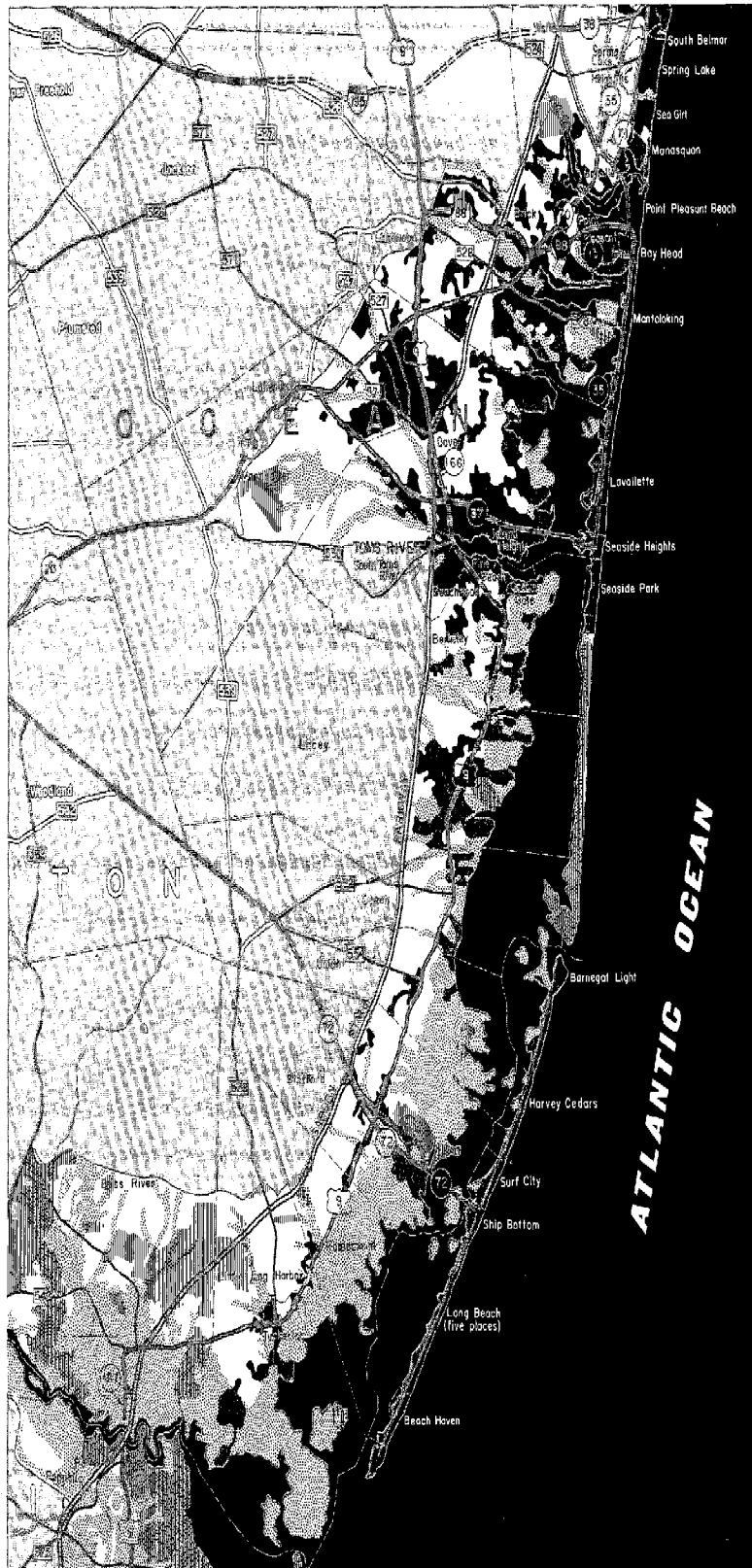
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


MAP 3

THE COASTAL AREA OF NEW JERSEY

Developed and Selected
Environmentally Sensitive Areas

CENTRAL SHORE OCEAN COUNTY



-  Developed Areas
-  Public Open Space
-  Selected Environmentally Sensitive Areas
Includes Wetlands, Flood Prone Areas, Class I and II Soils, White Cedar Stands and Slopes Over 15 Percent.
-  Outside Coastal Area



Scale 1:336,364

INTERIM LAND USE AND DENSITY GUIDELINES
STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF COASTAL ZONE MANAGEMENT

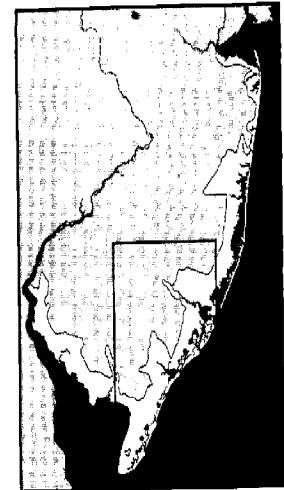
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



MAP 4

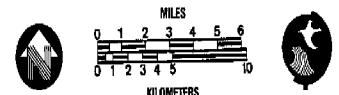
THE COASTAL AREA OF NEW JERSEY

Developed and Selected
Environmentally Sensitive Areas

SOUTHERN SHORE
BURLINGTON, ATLANTIC AND
CAPE MAY COUNTIES



-  Developed Areas
-  Public Open Space
-  Selected Environmentally Sensitive Areas
Includes Wetlands, Flood Prone Areas,
Class I and II Soils, White Cedar
Stands and Slopes Over 15 Percent.
-  Outside Coastal Area



Scale 1:336,364

INTERIM LAND USE AND DENSITY GUIDELINES
STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF COASTAL ZONE MANAGEMENT

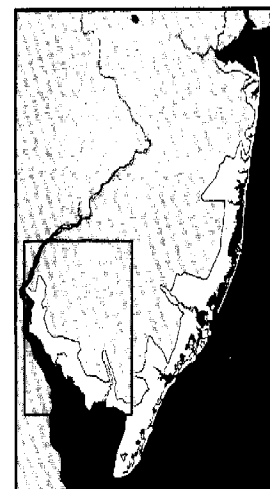
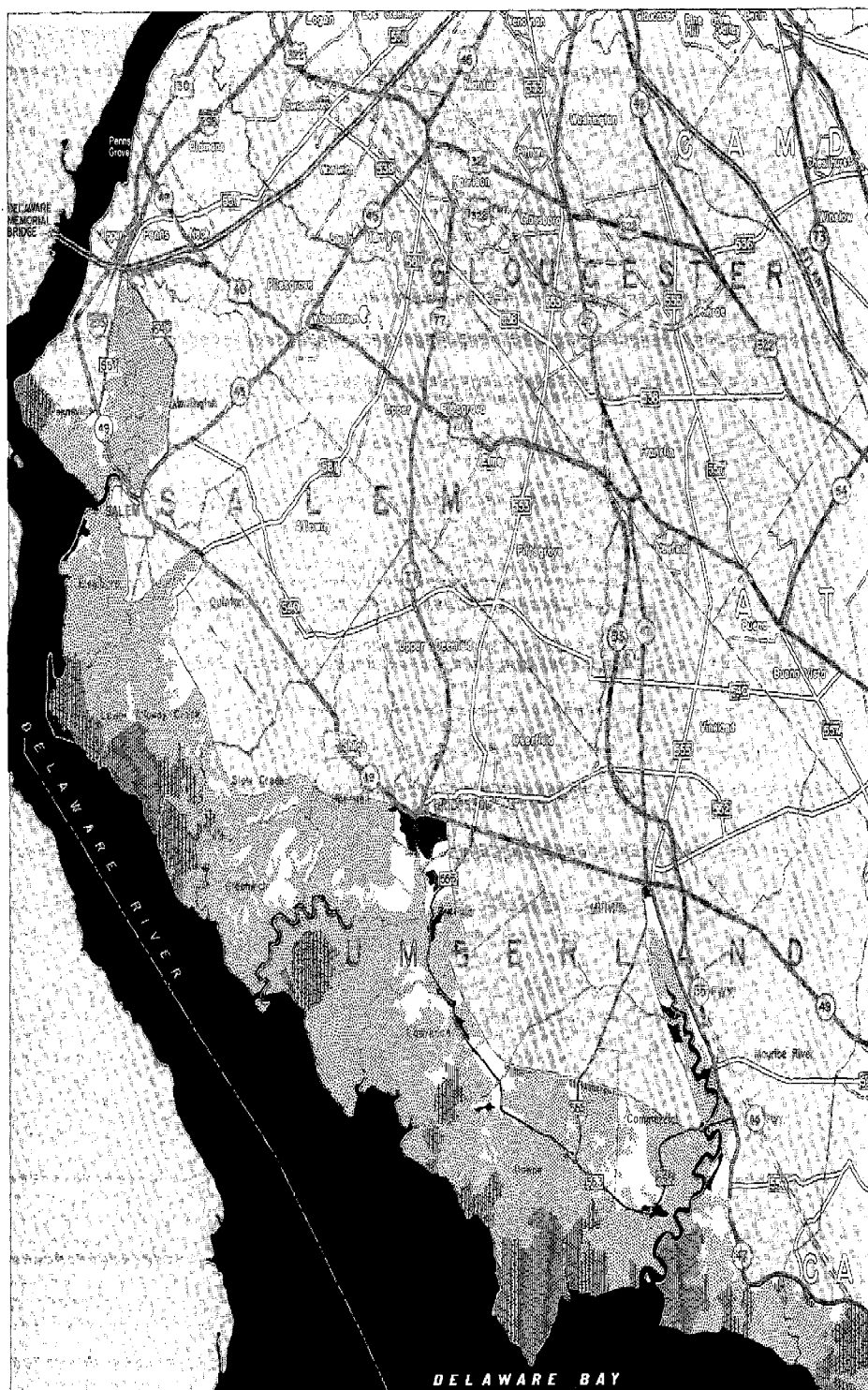
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



MAP 5

THE COASTAL AREA OF NEW JERSEY

Developed and Selected
Environmentally Sensitive Areas

DELAWARE BAY SALEM AND CUMBERLAND COUNTIES



-  Developed Areas
-  Public Open Space
-  Selected Environmentally Sensitive Areas
Includes Wetlands, Flood Prone Areas, Class I and II Soils, White Cedar Stands and Slopes Over 15 Percent.
-  Outside Coastal Area



Scale 1:336,364

INTERIM LAND USE AND DENSITY GUIDELINES
STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF COASTAL ZONE MANAGEMENT

DECEMBER 1975

SECTION THREE. Population in the Coastal Area
Past Trends, Present Levels, Short-Term Estimates

Synopsis

This section examines recent population characteristics in the counties, parts of which comprise the Coastal Area. Estimates are then made of anticipated population growth in the counties and their coastal segments to 1980.

I. Past and Present

A. The Coastal Counties*

The Coastal Counties are growing faster than the State of New Jersey as a whole (Table 12). The share of state population for these counties has been:

1960 --	13.5%
1970 --	15.1%
1974 -	15.8%

Coastal Counties' population has increased from 817,600 in 1960 to 1,084,200 in 1970 to 1,173,600 in 1974. Monmouth County is by far the most populous Coastal County, with 479,900 persons, 40.9 percent of the Coastal County total and nearly twice that of the second largest county, Ocean.

While Monmouth and Ocean are increasing their share of state population, Atlantic's share is declining. Cape May, Cumberland and Salem are growing at about the same rate as the state as a whole. The faster growth, then, is in the northern portion of the Coastal Counties.

From 1970 to 1974 the Coastal Counties added 89,400 to their population, an increase of 8.2 percent. This added population represented 36.4 percent of the state's growth during the four-year period (Table 13). The fastest growth, both in numbers and in percentage, from 1970 to 1974 was in Ocean County. Monmouth County added the second highest number of people, while Cape May had the second highest growth rate (Table 14). Ocean County added 47,000 persons between 1970 and 1974, nearly 60 percent of Coastal Counties' total. Monmouth had 20 percent, with the remainder shared by the four Southern Counties.

Ocean's increase of 22 percent was four times that of the second fastest growing county, Cape May, and five times that of the State of New Jersey. Only one county, Atlantic, grew at a slower rate than the state.

*The following analysis of population growth and change in the Coastal Area deals with Atlantic, Cape May, Cumberland, Monmouth, Ocean, and Salem as "Coastal Counties." Due to the very small population levels of Middlesex and Burlington within the CAFRA boundaries they have not been included for analysis purposes.

In terms of the overall population of the Area itself, however, the estimates probably make allowance for Middlesex and Burlington. Since the CAFRA boundary cuts through numerous municipalities, entire totals for some communities with portions outside the Area had to be included in arriving at overall totals. So the figures on population within the Area are probably somewhat inflated, certainly enough to include allowance for people in Middlesex and Burlington.

Table 12
Coastal Counties Population

	(Population (in Thousands))				Share of State			
	<u>1950</u>	<u>1960</u>	<u>1970</u>	<u>1974</u>	<u>1950</u>	<u>1960</u>	<u>1970</u>	<u>1974</u>
Atlantic	132.4	160.9	175.0	180.5	2.7	2.6	2.4	2.4
Cape May	37.1	48.6	59.6	63.4 *	0.8	0.8	0.8	0.9
Cumberland	88.6	106.8	121.4	128.4	1.8	1.8	1.7	1.7
Monmouth	225.3	334.4	459.4	479.9	4.7	5.5	6.4	6.5
Ocean	56.6	108.2	208.5	257.8 *	1.2	1.8	2.9	3.5
Salem	49.5	58,7	60.3	63.6	1.0	1.0	0.8	0.9
Total-Coastal Counties	589.5	817.6	1084.2	1173.6	12.2	13.5	15.1	15.8

Notes: Burlington and Middlesex Counties are not analyzed as "Coastal Counties."
1950, 1960 and 1970 are April 1 Census counts; 1974 is July 1 DLI estimate.

Source: Department of Labor and Industry
U.S. Bureau of the Census

*The Cape May County Planning Board estimates a 1974 population of 68.1 thousand.
The Ocean County Planning Board estimates 1974 population of 275 thousand.
It has not been possible in this study to reconcile the discrepancies. They
should be noted, however. The DLI figures are used throughout for consistency.

Table 13

Additions to Coastal Counties Population

	Added Population (in Thousands)			Percentage Increase		
	<u>1950-60</u>	<u>1960-70</u>	<u>1970-74</u>	<u>1950-60</u>	<u>1960-70</u>	<u>1970-74</u>
Atlantic	28.5	14.1	5.5	21.5	8.8	3.1
Cape May	11.5	11.0	3.8	31.0	22.6	6.4
Cumberland	18.2	14.6	7.0	20.5	13.7	5.8
Monmouth	109.1	125.0	20.5	48.4	37.4	4.5
Ocean	51.6	100.3	49.3	91.2	92.7	23.6
Salem	9.2	1.6	3.3	18.6	2.7	5.5
Total--Coastal Counties	228.1	266.6	89.4	38.7	32.6	8.2
State of New Jersey	1,231.5	1,101.3	245.6	25.5	18.2	3.4
Coastal Counties as % of State	18.5%	24.2%	36.4%	-	-	-

Sources: Department of Labor and Industry
U.S. Bureau of the Census

Table 14
Ranking of Coastal Counties
on Various Population Factors

	<u>Population Added</u> <u>1970-74 (in 000's)</u>	<u>Percentage Increase</u> <u>1970-74</u>	<u>Net Migration as %</u> <u>of Added Population</u>	<u>Residential Building</u> <u>Permits 1974</u>	<u>Population Density</u> <u>1974 (persons/sq.mi.)</u>
1 Ocean	49.3	Ocean 23.6 COASTAL COUNTIES	Cape May 118.3	Ocean 2,866	Monmouth 1,020 STATE 990
2 Monmouth	20.5	Cape May 6.4	Ocean 91.9	Monmouth 1,277	Ocean 405
3 Cumberland	7.0	Cumberland 5.8	Atlantic 79.0	Atlantic 1,224	Atlantic 318
4 Atlantic	5.5	Salem 5.5	Salem 63.8	Cape May 1,217	Cumberland 256
5 Cape May	3.8	Monmouth 4.5 STATE 3.4	Monmouth 38.5 STATE 37.8	Cumberland 575	Cape May 241
6 Salem	3.3	Atlantic 3.1	Cumberland 37.2	Salem 245	Salem 183

Source: Department of Labor and Industry

Population growth in any community comes from two sources:

- 1) Natural Increase -- excess of births over deaths
- 2) Net Migration -- excess of in-migration over out-migration

In Cape May County, natural increase declined from 1970 to 1974, and was more than compensated by in-migration. Ocean, Atlantic, and Salem grew primarily from in-migration, while Monmouth and Cumberland grew mainly from natural increase.

The number of residential building permits in 1974 is consistent with recent year-round population growth. Atlantic and Cape May show a relatively higher number of permits because of building for seasonal residents.

While the Coastal Counties have been growing faster than the State of New Jersey they still represent a relatively lightly populated region. Only Monmouth County (at 1,020 persons per square mile) has a population density equivalent to the state as a whole. Ocean County (at 405) has a density only two-fifths as heavy as the state, while the four southern counties have densities one-third to one-sixth the state level.

B. The Coastal Area

To assess clearly the impacts of growth within the Area, it is necessary to examine the portions of the Coastal Counties which actually fall within the CAFRA boundaries. By county, the Area includes the following estimated percentages of 1974 county population.

Cape May	95.7%
Ocean	89.0
Atlantic	80.9
Monmouth	54.1
Cumberland	34.8
Salem	4.1*

Due to the early resort character of most of the CAFRA counties, urbanization actually began at the coast. This accounts for the high proportion of the Coastal County population included in the CAFRA boundaries. Indeed much of the land west and north of the Area in the CAFRA Atlantic Coast counties is still a rural, largely agricultural buffer zone between a developed coastline and the metropolitan regions of New York and Philadelphia.

The Delaware Bay counties--Cumberland and Salem--on the other hand,

*It is interesting to note that CAFRA includes a large amount of Salem County's land area, but little population. This is because most of the Coastal Area within Salem is wetlands.

Table 15
Coastal Area* Population
1970-74

	<u>Population</u>		<u>Percent of County</u>		<u>Added Percent Increase</u>	
	<u>1970</u>	<u>1974</u>	<u>1970</u>	<u>1974</u>	<u>1970-74</u>	<u>1970-74</u>
Atlantic	144.1	146.1	82.0	80.9	2.0	1.4
Cape May	57.2	60.6	95.6	95.7	3.4	6.1
Cumberland	42.6	44.7	35.0	34.8	2.1	4.9
Monmouth	255.9	259.6	55.2	54.1	3.7	1.5
Ocean	185.2	229.3	87.9	89.0	44.1	23.8
Salem	<u>2.6</u>	<u>2.6</u>	<u>4.3</u>	<u>4.1</u>	<u>0.0</u>	<u>0.2</u>
TOTAL--						
COASTAL AREA	687.6	742.9	63.4	63.3	55.3	8.0

* Coastal Area estimate is larger than CAFRA as it includes all of the population of municipalities more than 50 % of whose land area is inside CAFRA boundaries.

Sources: Department of Labor and Industry
U.S. Bureau of the Census

Note: The negligible growth in Salem County was fewer than 100 people.

Table 16

Ranking of Coastal Area Segments
on Various Population Growth Factors

	Population Added 1970-74	Percent Increase 1970-74	Percent Share of Coastal Area Increase 1970-74
1 Ocean	44.1	Ocean 23.8	Ocean 79.6
		COASTAL ZONE 8.1	
2 Monmouth	3.7	Cape May 6.1	Monmouth 6.7
3 Cape May	3.5	Cumberland 4.9	Cape May 6.3
4 Cumberland	2.1	Monmouth 1.5	Cumberland 3.8
5 Atlantic	2.0	Atlantic 1.4	Atlantic 3.6
6 Salem	0.0	Salem 0.0	Salem 0.0

Sources: Department of Labor and Industry
Department of Environmental Protection

developed primarily inland. The economic activity and growth pressures here are outside the CAFRA Area and not along the coast.

The estimated population of the Coastal Area grew from 688,000 in 1970 to 743,000 in 1974. This addition of about 55,000 persons was an increase of 8.1 percent in four years (Table 15).

Growth in the Coastal Area was about 60 percent of that in the six Coastal Counties, and the share of county population in the Area remained nearly constant during that four-year period.

Ocean County of course added the most people, 44,000 in its coastal section. This was a 23.8 percent increase, slightly faster than the county as a whole. Cape May and Cumberland added to their coastal sections at about the same rate as the entire county. The coastal shares for Atlantic and Monmouth Counties declined, however, as faster growth took place inland. Salem had essentially no growth here (Table 16).

Ocean County's coastal area has fewer people than Monmouth's, but it added twelve times as many people during 1970-1974 as Monmouth did. Ocean's percentage increase of 23.8 far exceeded the 6.1 percent rate of Cape May.

During 1970-1974, Ocean County had nearly 80 percent of the population growth of the Coastal Area. Monmouth and Cape May each had about seven percent of added population, with the remaining eight percent divided between Cumberland and Atlantic.

1. Localized Increases in the Coastal Counties

The Northern Shore

The major growth areas in Monmouth County during this four-year period were:

The major growth areas in Monmouth County during this four-year period were:

<u>Municipality</u>	<u>Pop. Added</u>	<u>Percent Increase</u>	<u>Status in CAFRA</u>
Middletown Twp	2,265	4.1%	Mostly out
Howell Twp	1,940	8.7	Outside
Freehold Twp	1,685	12.7	Outside
Ocean Twp	1,670	8.9	Outside
Manalapan	1,475	10.5	Outside

For the two cities within the CAFRA area, growth was slow:

	<u>1970</u>	<u>1974</u>	<u>Pop. Added</u>	<u>Percent Increase</u>
Asbury Park	16,550	16,790	240	1.4%
Long Branch	31,880	33,255	1,375	4.3

The Central Shore

The major growth areas of Ocean County during 1970-1974 were primarily within CAFRA boundaries.

<u>Numerical Growth</u>		<u>Percentage Change</u>	
Brick Township	9,300	Union Township	170%
Lakewood Township	7,200	Manchester Township	70
Dover Township	6,000	Lacey Township	57
Manchester	5,300	Little Egg Harbor	56
Berkeley Township	4,200	Berkeley Township	52

While Dover Township had been the growth center for Ocean County in the late 1960's, for the period of 1970-74 it ranked third in numerical growth, and had a percentage increase of only 14 percent, slower than the County as a whole.

The Southern Shore

Atlantic County has grown despite the fact that the population of Atlantic City itself has declined from 62,000 persons to 44,500 persons in 24 years. The 1970-74 period showed a decline of 7.1 percent, with 3,400 persons leaving the city.

<u>County</u>	<u>1950 Pop.</u>	<u>Pct. of County</u>	<u>1974</u>	<u>Pct. of County</u>	<u>Pct. Change 1950-74</u>
Atlantic City	61,700	46.6	44,500	24.6	-27.9
Remainder of County	<u>70,700</u>	<u>53.4</u>	<u>136,000</u>	<u>75.4</u>	<u>+92.4</u>
	132,400	100.0	180,500	100.0	36.3

The largest decrease occurred in the 1960's when the city lost 11,164 residents. This decline is a result of out-migration to the surrounding suburban areas on the mainland--specifically, Absecon, Linwood, Northfield, and Somers Point and the adjoining island communities such as Brigantine. It is primarily a white out-migration. In 1960, 63.5 percent of the city's 59,500 people were white. By 1970, population was 47,900, with 54.6 percent white.

Actual declines in population were not limited to Atlantic City. In Atlantic County, Longport Boro and Margate City had small losses. In Cape May County, Cape May City dropped nearly 12 percent from 1970 to 1974, while Wildwood City dropped 20 percent.

The highest growth areas for 1970-74 were:

<u>Municipality/ Township</u>	<u>County</u>	<u>Pop. Added</u>	<u>Percentage Increase</u>	<u>CAFRA Status</u>
Egg Harbor	Atlantic	2,215	22.1	Partially in
Hamilton	Atlantic	1,165	18.1	Outside
Lower	Cape May	965	9.5	All in
Sea Isle	Cape May	830	48.1	All in
Somers Point	Atlantic	780	9.7	All in

Delaware Bay

Neither Cumberland nor Salem County has experienced intensive pressure for growth and development. In fact, during the 1960-1970 decade, Salem County experienced an out-migration of population, mainly in the "active labor force" group. Urbanization tends to concentrate around the cities of Bridgeton, Millville and Vineland where 74 percent of Cumberland County's population is found, and in Salem County's northwest section, related to the port activities of the Delaware River and the large industrial complexes in the Wilmington Metropolitan area.

Table 17
Annual Growth Rates of
Coastal Area Segments, 1970-74

	<u>1970-71</u>	<u>1971-72</u>	<u>1972-73</u>	<u>1973-74</u>
Atlantic	0.3	0.5	0.2	0.4
Cape May	0.5	1.8	2.0	1.7
Cumberland	1.5	1.7	0.9	0.7
Monmouth	0.4	0.4	0.3	0.4
Ocean	3.7	8.2	7.3	2.9
Salem	Represents less than 25 person change			
Total-Coastal Area	1.3	2.8	2.5	1.3
Total-Coastal Counties	1.6	2.2	2.2	1.2
State of New Jersey	0.9	0.8	0.7	0.6
Coastal Area as % of State Growth	13.2	31.2	36.1	22.6

Note: All figures as of July 1

Source: Dept. of Labor and Industry

2. Recent Decreases in Growth. Growth rates have fallen from the pace of the early 1970's. For the state as a whole, the growth rate has declined steadily from 0.9 percent in 1970-71 to 0.6 percent in 1973-74 (Table 6).

The Coastal Area, growing at rates slightly faster than Coastal Counties, has been substantially above state rates. Coastal Area growth hit its peak in 1971-1972 at 2.8 percent, falling off to 1.4 percent--only one half that rate--in 1973-1974. Area and county growth rates from 1970 to 1974 are displayed in Table 17.

Ocean County's Coastal Area growth rate peaked at 8.2 percent in 1971-1972. This rate dropped faster than any other county, to 2.9 percent in 1973-1974, only 35 percent of the high two years earlier. Cumberland is down from the 1970-1972 pace while Cape May was rather stable for the last three years, and above the 1970-1971 pace. Atlantic and Monmouth Counties have consistent growth rates for the four year period.

In summary, 1971-1972 was the peak year of Coastal Area growth, at 2.8 percent. The 1973-1974 rate of 1.3 percent is the same as that of 1970-1971, but now the trend is downward rather than upward.

The trend is likely to continue downward for a while, for 1974 showed the fewest residential building permits in New Jersey since 1960. Housing permits and starts are at an even lower rate for 1975.

II. Estimated Population Growth to 1980

A number of sources were examined to arrive at a reasonable range of short-term year-round population estimates for the Coastal Area. A methodology was established by Rivkin Associates which considered that a range for each county and each county segment within the Coastal Area was most appropriate in view of uncertainties regarding economic conditions, housing costs, and migration.* From these

* The principal sources examined were:

1. Modeling State Growth (MSG) 1973 by the Center for Urban Policy Research at Rutgers University, sponsored by the Department of Community Affairs. MSG contains employment projections by County, industry, and occupation as well as employment-related households. It does not contain aggregate population projections as such. Rivkin Associates extrapolated estimates from the employment and household base.

2. The Department of Labor and Industry Projections (1975), Office of Business Economics. DLI's estimates for 1980 are based on cohort survival (natural growth) and net migration patterns for each of the 21 counties in New Jersey and are aggregated for the state as a whole. In 1975, DLI made four sets of projections for 1980.

footnote continued on next page.....

various sources we concluded that the analyses prepared by the Department of Labor and Industries in 1975 reflected the most recent official data. Because growth rates have continued to decline, these appeared to offer reasonable basis for the high end of the projections. These analyses were then adjusted to establish "low" and "moderate" estimates for each county. Further adjustments were made to allocate shares of county projected population to the Coastal area within each jurisdiction.

A. The Coastal Counties

Table 18 presents the overall estimates for each county to 1980. Table 19 summarizes the information and indicates the range of proportional and absolute increases for the Coastal Counties as a whole. Between 1970 and 1974 total population growth was 89,400, or 8.2 percent. Between 1974 and 1980 growth may be 86,400 - 126,400, or 7.4 percent - 10.4 percent. Over the entire 1970-1980 decade this total population growth in the Coastal Counties may be 176,000 - 206,000, or between 16 and 20 percent.

If the "moderate" estimate is employed, the estimated overall population increase of 9.1 percent for the last six years of the decade is only slightly more than the 8.2 percent recorded for the first four years.

This is indicative that the growth rate is now slower. Even with major improvement in economic conditions it will not reach the early 1970 levels within this decade.

Again, using the "moderate" estimates, Ocean County continues to be

footnote continued from page 47

- Series I--cohort survival (1970-74 trends) zero net migration;
baseline estimate of population
- Series II--continuation of current trend of population growth
shown in period 1970-74
- Series III--long-term trend based on experience of 1900-1970,
for both cohort-survival and net migration
- Series IV--averaging method with adjustments to reflect spe-
cific known conditions and development patterns.

3. County Plans. Each of the Coastal Counties has made population projections for 1980 as part of the comprehensive planning process. They were made from one to 10 years ago, with the most recent reflecting slow downs in growth (Monmouth and Ocean) and the earlier ones anticipating higher growth rates than have occurred (Atlantic and Cumberland).

4. The State Department of Conservation and Economic Development, 1968. This predecessor agency to DLI and DEP made a 1980 population estimate by county.

the fastest growing, with Cape May second, and Atlantic the slowest.* The ranking by percentage increase between 1974 and 1980 is as follows.

Ocean	23.0 percent increase
Cape May	10.4
Cumberland	6.7
Salem	5.4
Monmouth	4.6
Atlantic	3.6

B. The Coastal Area

Table 20 indicates our allocation of coastal county growth to the Coastal Area itself, again by "low," "moderate," and "high" estimates.

It appears that between 1974 and 1980, growth within the Area may range from 60,400 to 91,000 people. Total Coastal Area population will then be from 803,300 to 834,000.

This would represent a population increase over the 1970-1980 decade of from 16.8 to 21.3 percent.

By 1980, Ocean County's Coastal Area will have more people than in the Monmouth County portion, because Ocean will continue to grow (in the Coastal Area) at a rate far exceeding that of Monmouth (where very little available land for future development exists) and the other counties, all of which are beyond the commuting shed of the metropolitan regions.

Again using the "moderate" estimate, the following presentation displays the ranking of the various county segments.

	<u>Population Added 1974-1980</u> <u>(in 000)</u>	<u>Percent of</u> <u>Total Population Growth for</u> <u>County in Coastal Area</u>
Ocean	56.3	74.9
Cape May	6.5	8.6
Monmouth	6.5	8.7
Atlantic	3.1	4.1
Cumberland	2.8	3.7
Salem	0.0	0.0
	<u>75.2</u>	<u>100.0</u>

*As indicated earlier, both Ocean and Cape May Counties estimate their present population at higher figures than DLI. The ranges adopted in the projected figures are sufficiently broad, however, to cover the realistic 1980 possibilities for both counties despite discrepancies in present-level estimates.

Table 18
Summary of Aggregate Coastal Counties
Population Estimates 1970-1980

	<u>Population (in 000)</u>			
	<u>1970¹</u>	<u>1974²</u>	<u>1980³</u>	<u>Percent 1970-1980³</u>
Low	1,084.2	1,173.6	1,260.0	16.2
Moderate	1,084.2	1,173.6	1,280.0	18.1
High	1,084.2	1,173.6	1,300.0	19.9

	<u>Population Added (in 000)</u>		
	<u>1970-1974²</u>	<u>1974-1980³</u>	<u>1970-1980³</u>
Low	89.4	86.4	175.8
Moderate	89.4	106.4	195.8
High	89.4	126.4	205.8

	<u>Percent Increase</u>	
	<u>1970-1974²</u>	<u>1974-1980³</u>
Low	8.2	7.4
Moderate	8.2	9.1
High	8.2	10.8

Source: 1. U.S. Bureau of the Census
 2. Department of Labor and Industry
 3. Rivkin Associates, Inc.

Table 19
1980 COASTAL COUNTIES POPULATION ESTIMATES
(in thousands)

County	1970 Census	1974 Estimate	1980 Projections			% Increase 1970-74			Percentage Increase 1974-80			Percentage Increase 1970-80		
			Low*	Mod**	High***	Low	Mod	High	Low	Mod	High	Low	Mod	High
Atlantic	175.0	180.5	185	187	190	3.1	2.5	3.6	5.3	5.7	6.9	8.6		
Cape May	59.6	63.4	67	70	67	6.4	5.7	10.4	5.7	12.4	17.4	12.4		
Cumberland	121.4	128.4	135	137	135	5.8	5.1	6.7	5.1	11.2	12.8	11.2		
Monmouth	459.4	479.9	498	502	509	4.5	3.8	4.6	6.1	8.4	9.3	10.8		
Ocean	208.5	257.8	309	317	332	23.6	19.9	23.0	28.8	48.2	52.0	59.2		
Salem	60.3	63.6	66	67	67	5.5	3.8	5.4	5.4	9.4	11.1	11.1		
COASTAL COUNTIES	1,084.2	1,173.6	1,260	1,280	1,300	8.2	7.4	9.1	10.8	16.2	18.1	19.9		

Sources: 1970-U.S. Census

1974-Department of Labor and Industry, State of New Jersey

*Rivkin Associates. Low estimates are considered the lowest growth possible, calling for about the same number of residents added in 1974-1980 as in 1970-1974.

**Rivkin Associates. Moderate estimates considered most likely projections, midway between low and high projections for coastal counties.

***Based on an average of the three highest DLI projections, Series II, III, and IV. See footnote, p. 48

Table 20

1980 COASTAL AREA POPULATION ESTIMATES
(In Thousands)

RIVKIN ASSOCIATES PROJECTIONS

Counties	1970 Population	Added 1970-1974	1974 Population	Added to Area 1974-80		1980 Area Population			
				Low	Mod	High	Low	Mod	High
Atlantic	144.1	2.0	146.2	1.5	3.1	5.5	147.6	149.2	151.6
Cape May	57.2	3.4	60.6	3.6	6.5	3.6	64.2	67.1	64.2
Cumberland	42.6	2.1	44.7	2.0	2.8	2.0	46.7	47.4	46.7
Mormouth	255.9	3.7	259.6	4.3	6.5	10.2	263.9	266.1	269.8
Ocean	185.2	44.1	229.3	49.1	56.3	69.8	278.4	285.6	299.1
Salem	2.6	0.0	2.6	-0.1	0.0	0.0	2.5	2.6	2.6
COASTAL AREA	687.6	55.3	742.9	60.4	75.2	91.0	803.3	818.0	834.0

Sources: 1970-U.S. Census

1974-Department of Labor and Industry, State of New Jersey
1980-Rivkin Associates, Inc.

See footnotes, Table 19.

C. Summary Implications for Population Growth by Sub-Area

The Northern Shore

Monmouth County is likely to add 18-30,000 persons during the period from 1974 to 1980. This represents an increase of 3.8 - 6.1 percent. The most reasonable expectation is for an increase of about 22,000 people or 4.6 percent. Only a third of this growth would be in the Coastal Area, with about 6,500 people added.

Based on recent development activity and the availability of remaining developable land, the CAFRA Area communities most likely to grow during the period are:

- Wall Township (partly within CAFRA boundaries)
- Neptune Township (partly within CAFRA boundaries)
- Matawan Township (partly within CAFRA boundaries)
- Long Branch (entirely within CAFRA boundaries)

The Central Shore

Even with slowdowns in economic activity and the housing industry, we project an increase for 1974-1980 between 20 and 29 percent. This growth rate would add 50-75,000 persons to the county during this six year period. The bulk of this increase would come within the CAFRA Area. The 1980 county population then would be in the range of 309,000 to 332,000. This range is substantially below the 444,000 in 1980 used by the Ocean County Sewage Authority in their planning for the new regional sewage treatment system.

The major areas of growth for Ocean County are likely to be:

- Brick Township (all within CAFRA)
- Dover Township (all within CAFRA)
- Lakewood (majority within CAFRA)
- Manchester (partially within CAFRA)
- Berkeley (partially within CAFRA)
- Jackson (outside CAFRA).

Growth will mainly be in the north central portion expanding west and south from existing developed areas.

The Southern Shore

By 1980, Atlantic County will grow about 3.6% from the 1974 figures. This growth rate will be the slowest in the coastal counties, but does mean an additional 10-15,000 persons. Much of this growth will be inland, outside the CAFRA Area. About 3,000 persons will be added within the Coastal Area, only one fourth of the total county growth. The major growth areas are expected to be Egg Harbor and Galloway Township. In Cape May, on the other hand, virtually all growth will come within the CAFRA Area; e.g., Lower Township and the inland communities such as Ocean City, Stone Harbor, and Wildwood Crest. Cape May could add 7-10,000 permanent residents.

Projections for Cape May should also be sensitive to the seasonal population. The County estimates that there are eight times as many summer residents/visitors as permanent residents. The county's estimated 1975 summer population was in excess of 580,000 persons, and over 4 million persons visited Cape May County during 1975. At the present time, however, we have no basis for projecting short-term growth in seasonal population.

Delaware Bay

Cumberland County is projected to add 13-16,000 persons during the six years from 1974 to 1980. This 5-6 percent increase would rank fourth highest among the coastal counties, ahead of only Monmouth and Atlantic.

Increases in the Coastal Area, however, would range only from 2-3,000 persons. This growth is large compared to Salem County, and will be primarily around Bridgeton, as part of the tri-city urban development. Out of the 5-8,000 persons to be added to Salem by 1980, effectively none would be in the Coastal Area. The change, if any, would be less than 50 persons, and could even be a reduction in existing population.

SECTION FOUR: Evaluation of Short-Term Development Pressures and
Issues with Impact on the Land and Water Use of the Coastal Area

Synopsis

This section examines various land and water use demands that might occur during the interim guidelines period. The policy issues that are raised by these demands which should be addressed by the interim guidelines are analyzed, and several policy positions for DEP are suggested. New demands due to population growth and to energy related facilities receive primary attention, although other prospective land uses are addressed as well.

I. Housing, Support Facilities and Community Services

Primary demand for land in the Coastal Area continues to stem from housing requirements. Between 1974 and 1980, communities within the CAFRA boundary may need to absorb 60,000 - 90,000 additional people. This compares with approximately 55,000 permanent residents added during the boom years of 1970-1974. The low, and we believe, more realistic end of the range suggests about the same number of people in the last six years of the decade as in the first four.

This pressure will fall disproportionately on Ocean County; about 75 percent of the growth. Monmouth (whose available vacant land is extremely limited) and Cape May will absorb about 17 percent. Atlantic and Cumberland may each take about 4 percent. Since the Coastal Area within Salem County is primarily wetlands, growth there will be negligible.

While seasonal dwellings will undoubtedly increase (both resident and transient accommodations) it has not been possible to estimate any order of magnitude from the data available. Second homes are the hardest-hit sector of the housing industry. Their recovery as a development force within the period to 1980 will probably not be substantial. Indeed the recent pattern of conversion of seasonal units to year-round use, especially in Ocean and Monmouth Counties, will probably continue. Some new pressure for seasonal accommodations along the barrier beaches of Ocean, Atlantic, and Cape May will undoubtedly occur, but in magnitudes which cannot now be estimated.

Housing, as the primary land use demand, presents some important issues which the guidelines must address. What scale may be anticipated? What location and density patterns may be expected? And what are the public fiscal implications of these patterns? What patterns of community facilities and services can result? Are there special groups --such as low-to-moderate income families and the retired--whose needs must be addressed? How should CAFRA guidelines be framed, in respect to housing and community facilities, to foster the environmental and economic development objectives of the legislation?

A. Scale of Production and Land Demand

The population growth estimates can be converted to rough indicators of dwelling units and land demands. More calibrated estimates should be produced in the course of preparing alternative environmental strategies.

1. Dwelling Units. Given the recent demographic prominence of small families plus the area's attraction for retirement communities, we believe an average figure of three persons per dwelling unit will be a generous indicator of housing requirements. Applied to the population growth range above, this gives a demand of 20,000 - 30,000 dwelling units required during the 1974-1980 period.

Even the 20,000 floor may be on the high side. According to the area's home builders and Ocean County officials, currently about 5,000 dwellings are vacant and for sale in this key jurisdiction. This is a reflection both of market conditions and concern over commuting in an energy shortage. Absorption of these units may influence the scale of future building. Nevertheless the 20-30,000 range should provide an ample envelope for impact assessment, especially if it can be considered to include seasonal as well as year-round demand.

As indicated above, CAFRA applications for over 7,600 units had been approved, and over 4,000 were pending in March, 1976. This level presently within the pipeline would be consistent with the above estimates.

2. Land Absorption. Density is the key to estimating land absorption requirements. Indeed density is both one of the principal issues in the Coastal Area and one of the main factors over which CAFRA's permit-issuing process can have influence. Numerous studies have examined prevailing zoning patterns in New Jersey, and county planning programs have depicted both the allowable and existing density patterns within the Area. By and large--with the exception of high density units along the barrier beaches--recent developments have been low density, single-family in character at lot sizes from 1/5 of an acre up. Cluster development, townhouses and garden apartments are becoming more popular. However, the prevailing pattern and prevailing municipal zoning emphasizes the low density single-family detached unit.

What for the future?

Two average levels of density are postulated below as a base for estimating residential land demand to 1980. One, at 4 dwelling units per acre, implies the continuation of the existing low density trend. The second, at 8 dwelling units per acre, implies a much greater emphasis on single-family clusters, townhouses, and apartments.

<u>Alternative</u>	<u>Density</u>	<u>Dwelling Units</u>	<u>Acres</u>	<u>Sq. Mi.</u>
A.	4/acre	20-30,000	5,000-7,000	7.8 - 11.7
B.	8/acre	20-30,000	2,500-3,750	3.9 - 5.9

3. Support Facilities. Clearly, the land use requirements of new population growth extend considerably beyond the dwelling unit site. Commercial and recreational facilities are required, along with schools, hospitals, libraries, and other community support services. Many built-up areas today lack sufficient support facilities for existing population. Others have surplus capacity produced during the recent high growth period. (Examples of the latter are regional shopping complexes in Monmouth and--now under construction--in Ocean Counties.) Except on an area-specific basis, where present capacities are clearly

assessed, no reasonable estimate of such requirements can be made. Nor is such an estimate appropriate in this present study. Nevertheless, some indicators of support requirements in relation to population demand can be given. We have selected shopping facilities and outdoor recreation space as representative. While the density of residential development has some bearing on need, by and large, standards for these uses are related to population volumes rather than residential form.

a. Shopping facilities to serve the anticipated growth (neighborhood, community, and regional) could require between 90 and 130 acres.*

b. Outdoor recreation space (playgrounds, parks, regional open space) could amount to 1,500-2,250 acres.* These would be the most land extensive service requirements.

4. Density and Location-Dependent Support Facilities. Other forms of support facilities are directly dependent on density and represent among the most costly of public services. Most particularly these are roads and utilities (water, sewer). It is fair to say that the lower the density of anticipated development in the Area, the more extensive and more expensive the roads and utilities systems will be to serve the same level of population. The more scattered the development (regardless of density), the more land area is impacted. When growth leapfrogs vacant land contiguous to existing facilities and services, the more costly extension of these services will become.

5. Implications of the Land Demand. Conclusions important to the formulation of interim guidelines can be drawn from the above presentation.

Growth pressures from new population demand in the Area to the end of the decade will be manageable. From the standpoint of land availability there should be an ample supply of building sites without necessarily endangering wetlands, flood-prone property, historic areas and other environmentally sensitive features because of any inevitable pressures for residential development. The range of land needs for housing is broad--from 2,500 acres to over 7,500, depending on densities. Certainly this is a lot of land. In terms of available and vacant land within the Area, however, these are relatively small figures. In Ocean County, for example, in 1973 there were over 160,000 acres of vacant or agricultural land exclusive of wetlands. Even if the bulk of this land were proscribed from development for one reason or another, and even if the support requirements for housing equalled the housing land itself, it is our opinion that many options for

*These are figures based on composite, generalized indicators derived from: Chiara, Joseph and Koppelman, Lee, Planning and Design Criteria, Van Nostrand Reinhold, New York, 1969.

accommodating short-term demand would exist.

The need is also relatively modest as compared with past levels of land absorption. Between 1962 and 1973, 94,500 acres were developed in Ocean County, a land absorption rate of 8,600 acres per year.

Present committed sewer expansions in Ocean County will result in a theoretical expansion of capacity by over 150,000 people beyond 1974 totals. Elsewhere in the Area (with the possible exception of Monmouth County) the twin features of vacant land availability and expanded sewerage capacity will come into play. Thus, in our opinion, there is no absolute shortage of land to be confronted in the short run within the major growth areas. Local communities and DEP, as the final decision maker, should have a wide range of options for channeling new residential development and its allied services.

B. Location and Density

Two, rather contrasting patterns of location and density appear in the Coastal Area and have been discussed earlier. One, along the barrier islands and beaches, is highly compact, fairly high in density, although units are primarily single-family detached. This stems largely from the relative scarcity of sites in the resort and recreation areas, and the high demand for available land.

The second, in the rapidly developing inland areas, particularly Northern Ocean County and Monmouth County, is also predominantly single-family detached in nature. It is much "looser," however. Older inland communities evidence fingers of development extending out along state and county roads from the core areas (e.g., Toms River). Many others (e.g., Manchester and Dover Township) are increasingly characterized by free-standing, isolated developments surrounded by open space--much of it still in agricultural use. Scatteration is apparent. Subdivisions have "leap-frogged" large areas of vacant land.

Each of these two prevailing patterns presents CAFRA with particular, and different kinds of policy problems.

1. The Issues of Suburban Sprawl. The inland development in the Coastal Area evidences those features frequently defined as "sprawl."

Urban sprawl is the growth of a metropolitan area through the process of scattered development of miscellaneous types of land uses in isolated locations on the fringe, followed by the gradual filling-in of the intervening spaces with similar uses.¹

1. Fred P. Bosselman: "Alternatives to Urban Sprawl: Legal Guidelines for Governmental Action," National Commission on Urban Problems, Washington, D.C. 1968, p. 5.

William H. Whyte in The Last Landscape depicts a pattern very similar to:

what the New York Regional Plan Association calls 'Spread City' - not a true city because it lacks centers, nor a suburb because it is not a satellite of any city, nor is it truly rural because it is loosely covered with houses and urban facilities.¹

The accompanying figure from Tunnard and Pushkarev depicts this sprawl pattern in a section of New Jersey outside the CAFRA boundaries, but is quite typical of inland sections of the Coastal Area as well.

In examining "sprawl" as directly related to Ocean County it is important to point out that some elements of that pattern have been "inadvertent," established out of necessity rather than developer intent. Substantial areas of the county are owned by mineral companies, and are held for eventual extractive use. Some of these abut presently-settled areas, and, according to the Home Builders Association, have been held out of the residential market, forcing scatteration. Other properties have cloudy title and presently can not be purchased. Some decades ago, a number of newspapers gave away small pieces of Ocean County land with subscriptions (an amusing commentary on past land values), and clear titles to these "subdivisions" can not be tracked. Thus leap-frogging has been accelerated by the ownership pattern.

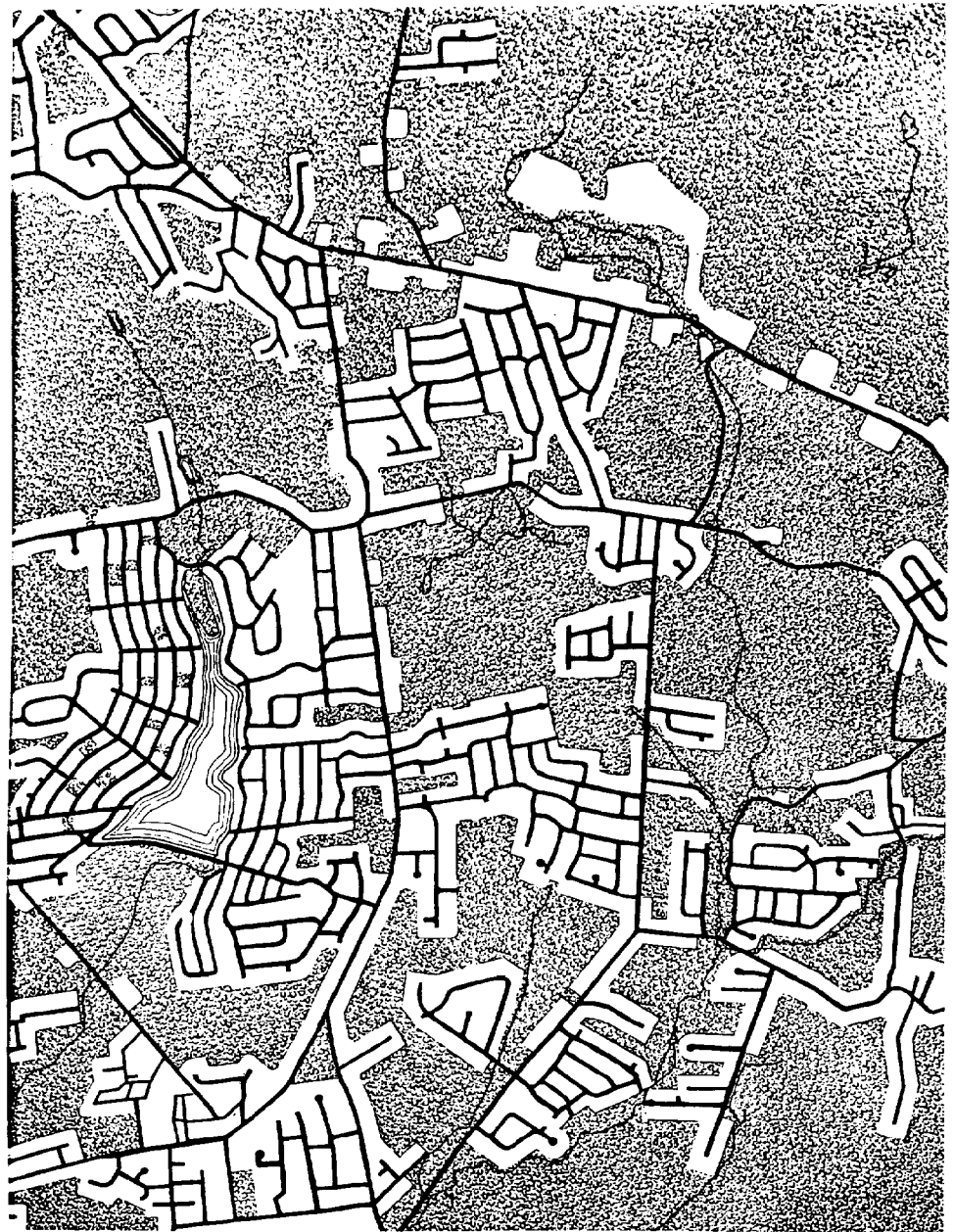
a. Benefits of Sprawl. Considerable controversy surrounds the subject of sprawl. As a development technique it demonstrates substantial benefits to various interest groups and to the public--at least in the short run. Indeed the benefits must be substantial or the approach would not have been applied so extensively. Some of the positive features of a sprawl pattern are as follows:

Land and Housing Costs. In the early stages of area growth, relatively loose location controls allowed a builder wide enough choice of sites to obtain relatively low cost land. A low land cost is reflected in the final housing price. This has been the experience in Ocean County. By and large housing costs (because of land price) have been lower here than elsewhere in suburbanizing New Jersey. People have been attracted with a broader range of income levels than can afford housing in the inner metropolitan ring. Trade-offs have been made against commuting time and costs, and the relatively low house price has prevailed.

A Rural Atmosphere. Scattered development gives the resident a sense of privacy in the midst of open country. So long as surrounding land is held out of development, this rural atmosphere can be maintained.

1. William H. Whyte: The Last Landscape, Doubleday, New York, 1968.

Figure 1



Patterns of sprawl: checkerboard pattern of large subdivisions in Wayne Township, N.J.

VACANT OR FARM LAND

1000 0 1000 2000 3000 4000 5000 FEET

Source: Christopher Tunnard and Boris Pushkarev: Man-Made America, Yale University Press, New Haven, 1963, page 83

Public Open Space Without Public Ownership of Open Space.

A corollary to the above is the retention of large open areas to buffer urbanization and to provide visual and climatic relief--without the necessity of public purchase. So long as land is held out of development or skipped over for one reason or another, communities have a public open space benefit without public costs.

Economic Value to Farmers and Other Rural Property Owners.

Sprawl development extends over much larger areas than concentrated development. It serves to "open up" trading and speculation and contributes to a rise in land values over substantial territory. For the New Jersey farmer, squeezed by high prices and high taxes, the possibility that his land may one day be worth money for building can be a welcome relief when few other options are available.

b. Costs of Sprawl. At the same time, however, the benefits of sprawl must be assessed against its negative consequences. These include:

Over-Extension of Development in Sensitive Areas. Relatively speaking, much greater area comes under the orbit or impact of urbanization in a sprawl pattern than with concentrated urban growth. This is especially an issue in the Coastal Area of New Jersey where the environment itself is of state-wide significance and has been earmarked for protection by the legislature. Sensitive wetlands and woodlands have been lost already; and the more extended or thinly-spread the pattern, the more difficult it is to preserve these natural features.

Ephemeral Nature of Open-Space Preservation. There is no guarantee, to resident or community, that much of the undeveloped open area will remain in its present state. Indeed with rise of land values, chances of eventual conversion are considerable. Protection of the rural atmosphere is temporary at best. Tunnard and Pushkarev have commented:

Scattered development makes a mockery of planning for ordered livable and efficient communities, and its chaos often contains the seeds of future blight on a scale that may dwarf the blight problems of present day central cities.¹

Dependency on the Automobile. The pattern, particularly when coupled with very low densities, increases dependency on the automobile and thereby the time and costs to reach both work place and services. In a time when energy conservation is critical to the individual and a matter of state concern, sprawl counters efforts to

1. Tunnard and Pushkarev, Op. Cit., p. 84.

conserve. Mass transit becomes difficult at best, and possibly not feasible at all. Again Whyte comments:

....This pattern scatters the places where people work as well as the homes they live in; it makes then utterly dependent on cars and unnecessarily lengthens the trip they have to make.¹

Impact of Costs and Availability of Public Services. Perhaps the greatest negative feature of sprawl is its contribution to increased public service costs--roads, sewers, water, health, fire and other essential community support systems. In a time of strained public finance, this matter must be of concern to municipalities and to the State of New Jersey which contributes to the financing of these services. The fiscal impacts of sprawl have been extensively studied both within the state and by researchers across the country. The conclusions are common and consistent. Low density, scattered development costs considerably more to service--in both capital and operating expenditures--than higher or mixed density development that is clustered or concentrated in pattern. In the course of this analysis we examined seven of the major studies which have in recent years assessed the fiscal impacts of alternative growth patterns.² Tables 21 through 25 which follow are adapted from two of these studies--the Costs of Sprawl and Cost/Revenue Analysis: Four Alternative Plans for Growth--Tucson, Arizona. Recognizing that these materials do not directly deal with the Coastal Area of New Jersey and must be utilized with caution, some clear conclusions may nonetheless be drawn.

1. Tunnard and Pushkarev, Op. Cit., p. 32.

2. Costs of Sprawl, Executive Summary, prepared by Real Estate Research Corporation for CEQ, HUD and EPA, 1974, Washington, D.C., USGPO, Stock No. 41111-003, \$.55.

George Sternlieb, et. al., Housing Development and Municipal Costs, New Brunswick: Center for Urban Policy Research, Rutgers University, 1973.

James W. Hughes, "The Fiscal Impact of Alternative Forms of Housing," in New Jersey Trends, edited by Thomas P. Norman, Esquire, New Brunswick: Institute for Environmental Studies, Rutgers University, 1974.

Housing and Suburbs: Fiscal and Social Impact of Multi-Family Development, New Jersey County and Municipal Government Study Commission, Ninth Report, October 1974.

Cost/Revenue Analysis: Four Alternative Plans for Growth--Tucson, Arizona, prepared by Booz, Allen and Hamilton for the Comprehensive Planning Process, City of Tucson, et. al., 1974.

Thomas Muller, Fiscal Impacts of Land Development: A Critique of Methods and Review of Issues, Washington, D.C.: The Urban Institute, 1975.

Marion Clawson, Suburban Land Conversion in the United States, Resources for the Future, Washington, D.C. 1972.

Table 21 depicts the relationship between per unit capital costs (for schools, roads, utilities and open space/recreation) and housing type. The most expensive is for conventional single-family detached subdivisions and the least expensive for a mixture of densities. Clustered single-family housing (using areas of common open space and siting units in groups to minimize utility lengths) is 15 percent less costly than conventional types, even at relatively low densities.

Table 22 derived from the Costs of Sprawl, shows a similar relationship for patterns of development, with sprawl the highest cost, and more clustered concentrated growth considerably less.

Table 23 comes from the Tucson study and shows a similar pattern of relationships for various land development approaches. Contained growth requires only two-thirds the capital costs of continued peripheral expansion.

Table 24 brings together both capital and operating costs in considering the fiscal impact of development patterns. Again low density sprawl comes out the most expensive to the public, with various forms of planned and clustered development progressively more favorable.

Is there any way of relating this generalized analysis to the immediate development future of the Coastal Area of New Jersey? Table 25 attempts such a formulation, using the factors established in the Costs of Sprawl. Over the 1974-1980 period we have estimated a demand for 20-30,000 dwelling units in the Coastal Area. In Table 25 these units have been accommodated according to two of the patterns analyzed; low density sprawl, and planned mix of densities. Capital and operating cost factors have been applied to each. Table 25 suggests that the capital savings between the two patterns could be as much as 25 percent. Because operating costs are less affected by development patterns, total savings would amount to almost 12 percent--a matter of significant benefit to families, developers, local, state and federal governments, all of whom must contribute some measure of support to these costs.

Again, the comparisons made must be regarded as illustrative, since actual mixes and density levels have not been projected for the Coastal Area. Yet the more costly form of development generally represents a continuation of past trends in the region.

c. Alternatives to Sprawl. There are alternatives to continuation of sprawl inland in the Coastal Area. These are not "unknown" alternatives, moreover, since each of the following approaches have, to a modest degree, been practiced within CAFRA boundaries. They represent, however, exceptions rather than the rule.

Clustering. Even at very low densities single-family detached houses can be clustered on a site. Common open space can be provided with permanent guarantees of its availability through dedication to a public agency or transfer to a home-owners association in the development. In addition to a higher level of amenity,

TABLE 21

COMMUNITY CAPITAL COSTS BY HOUSING TYPE

<u>Housing Type</u>	<u>Density</u> ¹	<u>Capital Costs Per Unit</u> ²	<u>Cost as Percentage of Single Family Conventional</u> ³
A. Single Family--Conventional	3.0	\$14,137	100.0
B. Single Family--Clustered	5.0	11,938	84.4
C. Townhouse Clustered	10.0	9,292	65.7
D. Walk-up (Garden) Apartment	15.0	7,833	55.4
E. High-Rise Apartment	30.0	3,628	25.7
Housing Mix (20 percent of each)	6.9	9,629	68.1

Source: The Costs of Sprawl, Executive Summary, p. 14.

¹ Units per net residential acre.

² Includes open space/recreation, schools, transportation (streets and roads), and utilities. Does not include other public facilities.

³ This indicates the ratio of each type of housing to the type with the highest cost, e.g., the \$11,938 per unit for "single-family clustered" is 84.4 percent of the \$14,137 for "single-family conventional."

TABLE 22
COMMUNITY CAPITAL COSTS BY HOUSING PATTERN

<u>Housing Pattern</u> ¹	<u>Capital Costs Per Unit</u> ²	<u>Percent of Highest Cost</u> ³
Low Density Sprawl	\$16,462	100.0%
Low Density Planned	14,582	88.6
Sprawl Mix	13,556	82.3
Combination Mix	13,046	79.2
Planned Mix	12,487	75.9
High Density Planned	10,995	66.8

Source: The Costs of Sprawl, Executive Summary, p. 10.

¹See Table 24 for proportions of housing density types included.

²Includes open space/recreation, schools, public facilities, transportation (streets and roads), and utilities.

³This indicates the ratio of each housing pattern to the pattern with the highest cost, e.g., the cost per unit of low density planned is 88.6 percent of that for low density sprawl.

See Table 24 for annual operating costs and total costs (capital and operating) for a 30-year period.

TABLE 23
COMMUNITY CAPITAL COSTS BY LAND USE PATTERN

<u>Land Use Pattern</u>	<u>Housing Density Percentage ¹</u>			<u>Capital Cost Per Unit ²</u>	<u>Percent of Highest Cost</u>
	<u>Low</u>	<u>Med.</u>	<u>High</u>		
Peripheral Expansion	82%	15%	3%	11,504	100.0%
Activity Centers	79	19	2	9,457	82.2
Satellite Cities	51	43	6	8,908	77.4
Contained Growth	34	58	8	7,775	67.6

Source: Cost/Revenue Analysis: Four Alternative Plans for Growth--
Tucson, Arizona, p. 11.

¹Low - 3 or fewer units per acre.
Med - 8 units per acre.
High - 21 units per acre.

²Includes water sewage disposal, electricity, natural gas, roads, buses, parks, flood plains and open space, fire, police, courts, connections, health, library, schools and general government.

TABLE 24

OPERATING AND TOTAL COSTS BY DEVELOPMENT PATTERNS

Pattern	Housing Types ¹	Units/Net Per Acre	Persons Per Unit	Pupils Per Unit	Annual Operating Costs 2	Percent of Highest	
						Operating Cost	Total Cost
I. Low Density Sprawl	75%-A, 25%-B	3.3	3.3	1.1	2,111	100.0%	100.0%
II. Low Density Planned	75%-A, 25%-B	4.3	3.3	1.1	2,067	97.9	94.7
III. Sprawl Mix	20% Each A-E	6.9	3.3	1.1	1,965	93.1	89.4
IV. Combination Mix (50% PUD, 50% Sprawl)	20% Each A-E	6.9	3.3	1.1	1,952	92.5	87.9
V. Planned Mix	20% Each A-E	6.9	3.3	1.1	1,937	91.8	86.3
VI. High Density Planned	10%-B, 20%-C 30%-D, 40%-E	13.6	3.1	1.1	1,873	88.7	81.2

Source: Costs of Sprawl, Executive Summary, pp. 9-11.
Rivkin Associates.

¹From Table 21.

²Includes open space/recreation, schools, public services, transportation (streets and roads), and utilities.

³Two times capital cost (to include interest) and 30 years of operating costs, from Table 22.

TABLE 25
FISCAL IMPACTS OF ALTERNATIVE DEVELOPMENT
PATTERNS ON THE COASTAL AREA OF NEW JERSEY
(generalized examples)

		<u>Number of New Units: 1974-80¹</u>	
<u>Representative Patterns</u>	<u>Per Unit</u>	20,000	30,000
<u>Capital Costs²</u>	<u>(\$000)</u>		
Low Density Sprawl ³	\$16.5	\$ 330,000	\$ 495,000
Planned Mix ³	<u>12.5</u>	<u>250,000</u>	<u>375,000</u>
Savings	\$ 4.0	\$ 80,000	\$ 120,000
<u>Total Costs -- 30 Years²</u>			
Low Density Sprawl	\$96.3	\$1,926,000	\$2,889,000
Planned Mix	<u>83.1</u>	<u>1,662,000</u>	<u>2,493,000</u>
Savings	\$13.2	\$ 264,000	\$ 396,000

¹Rivkin Associates based on estimates made in Section Three.

²Capital and Operating costs used on indices in Table 24.

³From Table 24.

however, clustering affords an opportunity to minimize utility lengths and substantially cut capital costs. The following sketch illustrates and compares the clustering technique.

Higher and Mixed Densities. Housing costs are rising with the costs of living. Land costs are rising also, as the first rush of development in suburbanizing sections of the Area has led to increased values of nearby land. More and more homeowners are resisting the maintenance time and costs of large lots; and families are getting smaller. All of these factors suggest that densities can be increased, within the parameters of market demand for the region. This means smaller lot sizes for single-family detached units, and an increasing mix of townhouses and apartments. Our review of CAFRA permits indicate that developments at 6 to 8 units per acre are being proposed for the inland areas--even in communities such as Dover Township--although still the minority of applications.

Infill and Extension. Past experience indicates that eventually areas subject to sprawl are filled in--often at much greater cost in land and services than the original development due to the time lags involved. Within the CAFRA boundaries the process of extension from existing developed areas and filling the gaps between leapfrogged subdivisions could be encouraged to accelerate--now rather than later--especially with the objective of making full use of existing and planned services and providing an appropriate basis for public transportation.

Redevelopment. Redevelopment of existing areas, particularly those in good physical condition, is a relatively remote possibility for much of the coastal region. In the older communities (especially depressed areas along the shore such as Atlantic City and Asbury Park) with an existing supply of community amenities and services, higher density redevelopment could take place to take advantage of accessibility to these services.

Large-Scale Planned Unit Development. One means of locating new growth in open country without incurring the diseconomies of sprawl, is to concentrate such development in "free-standing" new communities with their own complement of utilities and community services. This normally means large scale projects to warrant the expenditure, and mixed densities and land uses; including commercial facilities, offices or industries, health and recreational services. To some degree, retirement communities such as Crestwood Village have attempted this comprehensive effort--but thus far failure to provide sufficient internal services has made them a more sophisticated form of sprawl--highly dependent on communities some distance away for essentials. Although the need to aggregate large land areas for this purpose and to be certain of a market is paramount, such large scale planned communities can be considered appropriate alternatives to sprawl in the Coastal Area.

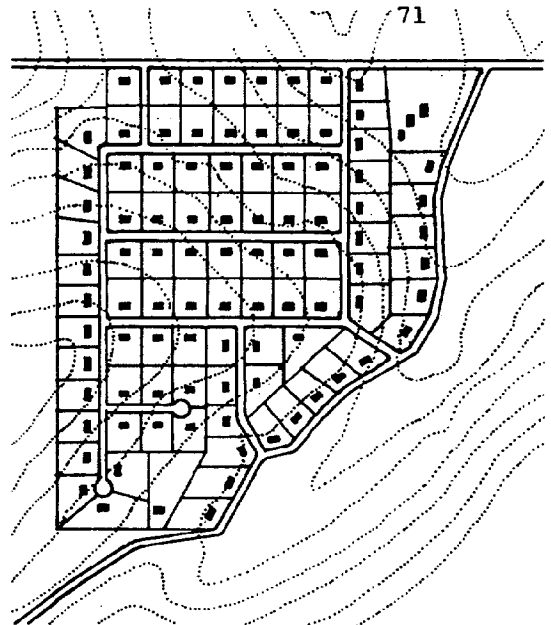
C. The State Interest in Guiding Residential Growth

In our opinion, the state should be vitally interested in encouraging alternatives to sprawl through its permit-issuing power and through use of the interim guidelines.

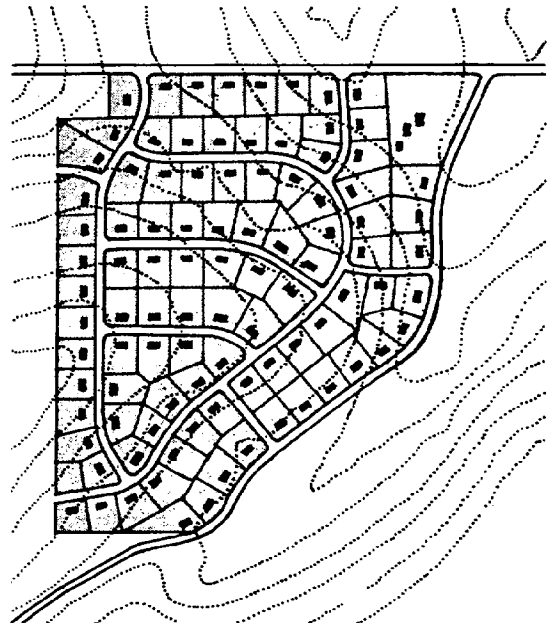
Figure 2

The practical advantages of a cluster design:

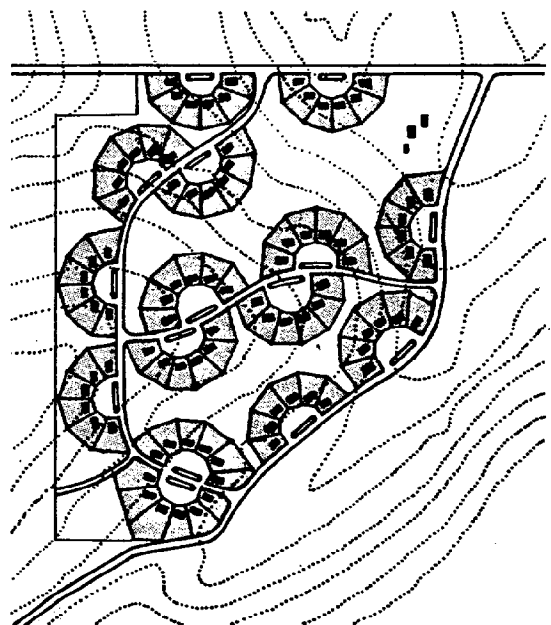
Rectilinear plan, 94 lots, 12,000 feet of streets and utilities.



Curvilinear plan, 94 lots, 11,600 feet of streets and utilities.



Cluster plan, 94 lots, 6,000 feet of streets and utilities.



Lot size in the first two cases is 50,000 square feet; in the third case, lot size is reduced to 30,000 square feet, with some 44 acres left open. Design by Myron X. Feld, planning engineer, from *The American City*.

Source: Christopher Tunnard and Boris Pushkarev: Man-Made America, Yale University Press, New Haven, 1963, page 111

Three concerns make guidance of community development patterns well within DEP's CAFRA responsibilities:

1. Protection of the Coastal Area land and water resources. This can be fostered generally by keeping as many of these resources as possible out of urban development; while at the same time accommodating needed population and economic growth.

2. Energy conservation. This is made difficult or impossible if residential and allied growth continues to spread in ways which maximize dependency on the automobile.

3. Interest in the economic well-being of individuals and communities, coupled with the need to conserve the state's own resources of financial assistance to the Coastal Area. Essential services should be provided, but in an efficient, cost-conserving manner.

Representatives of the area homebuilders have criticized a concern for the pattern of development as being outside the CAFRA-mandated responsibilities of DEP.

Their position is best summed up as follows:

...for various reasons, an individual might prefer an isolated setting for the type of development he desires, or that land in an area not adjacent to an already existing area is more reasonable to provide low and middle income housing; or for any number of reasons an individual wishes to develop away from an already existing area, that individual should have the right to do so and that the Department of Environmental Protection through interim guidelines should not prohibit or unduly restrict him from so doing.¹

1. The Balancing Function. If the matter concerned only a few isolated ex-urban projects this view of independent choice might be appropriate. Indeed small undertakings of a few houses each (under 25 units) are not covered by CAFRA and would generally be outside the policy purview of DEP. At issue, however, is the entire development pattern of an environmentally sensitive region. The projects to be screened are sizeable settlements which must be serviced by the public, for which roads and schools and utilities must be provided--and whose cumulative impact has already led to serious problems of environmental quality and public finance. The pattern of development is thus well within CAFRA's purview.

Under CAFRA the Department must perform a careful balancing function--as a mediator between the needs of environmental quality and regional

1. Letter from John De Vincens, of Giordano & Halleran, Counsel to the New Jersey Shore Builders Association, to David Kinsey, Chief, Office of Coastal Zone Management, DEP, January 5, 1975.

economic development. Within this role the Department can accept the regional need for housing and encourage its fulfillment. If alternatives exist, in respect to how those housing needs can be fulfilled, then the Department can justifiably formulate its policy to encourage those alternatives that are most environmentally sound and economically prudent.

2. Public Facilities Review. A policy to contain and channel residential development over the interim guidelines period should extend beyond review of private housing projects and support facilities such as shopping centers. Indeed, past experience indicates that certain key public services--specifically roads and sewer lines--can contribute to sprawl when they are extended into undeveloped areas. Development will gravitate to areas where they exist today or where they are most likely to be extended. Under CAFRA legislation, DEP is also charged with permit review over public road and sewer projects. That review can--within a policy framework that encourages contained growth--be exercised in a manner to deter roads and sewers from enlarging the extent of developable land before existing sprawl has been filled in.

D. The Ocean Front Pattern and High-Rise¹ Projects

Along the barrier beaches, and other ocean front areas within the CAFRA boundaries, development densities tend to be higher and patterns tightly contained. This has been due, to a great degree, to the scarcity of land in these prime recreation sections. Scarcity has, in recent years, stimulated construction of tall buildings (hotels and condominiums) at very high densities. Atlantic City was the original locus of such development and a distinctive skyline was created and accepted. But the building type has proliferated into lower-scale communities where they stand as visual intrusions: e.g., Long Branch, Sea Isle City, and on the Atlantic Highlands.

Two of the few denials under CAFRA have been for high-rise facilities. Each has been denied on grounds of disrupting the existing land use and density pattern and as aesthetic intrusion.

High-rise apartments and hotels can be extremely efficient in respect to use of land, energy and utility conservation, and residences for the elderly. At the same time they can contribute to traffic congestion, decrease the amenity of adjoining lower density areas, and--in the resort communities--shadow the beaches for long periods of the day and block ocean views of structures which exist already.

1. A particularly good analysis of the high-rise issue may be found in Donald M. Peterson's "High-Rise in the Coastal Zone, Guidelines for the Location and Regulation of High-Rise Residential Structures," a Princeton University Master's thesis in 1975. His principal recommendations are reflected in those discussed in Section Five.

This too is a matter which the guidelines can address. Rather than ban highrise structures from the Area, a more appropriate course (again in keeping with CAFRA responsibilities) would be to establish some basic standards and requirements for the location and orientation of highrise facilities. The use would be allowed, but the manner of application rationalized. Environmental and community values of the setting would be protected.

E. Low-to-Moderate Income Housing

People of all income levels have migrated to the Coastal Area. However, most of the recently produced housing for permanent residents--in Ocean County particularly--has been priced well below comparable units closer to the metropolitan areas. Relatively low land prices west of the beaches have contributed to this differential. While the families housed have not been those at the bottom end of the income ladder, the Coastal Area housing supply has allowed for a broader range of incomes than elsewhere in suburbanizing New Jersey.

The state has a severe shortage of moderately priced housing, a shortage that has been depicted in several ongoing studies of the Department of Community Affairs. There is a danger, however, that escalating land costs and the continued resistance of some municipalities to allow higher density and multi-family development, will result in a narrowing of those who can afford the area's housing.

The New Jersey Supreme Court, in So. Burl. Cty. NAACP v. Tp. of Mt. Laurel, 67 N.J. 151, 187 (1975), held that a government entity "must by its land use regulations, make realistically possible the opportunity for an appropriate variety and choice of housing for all categories of people who may desire to live there, of course including those of low and moderate income." "Developing" communities must take their "fair share" of regional housing needs, and not so zone their land to eliminate options for moderate income development. Many communities within the CAFRA boundaries are "developing," and DEP has accepted the Mt. Laurel decision as policy.* Although its responsibility for providing housing is not direct, DEP can formulate guidelines for the interim period to encourage the kinds of densities which allow for lesser-cost housing...and thereby contribute to a broadened supply. These higher densities correspond with the townhouse, apartment, and mixed grouping alternatives to sprawl cited above, providing yet another reason for encouragement of these approaches. Publicly assisted and non-profit housing efforts which are able to meet the environmental requirements of CAFRA would also be encouraged.

*According to the Department of Community Affairs, there was a shortage of over 140,000 low and moderate income housing units in the Coastal Counties during 1970. This includes a much larger area than CAFRA boundaries, however, and a practical assessment of the present need within the Area has yet to be made (Preliminary Draft, Coastal Zone Housing Issues, 1975, p. #4, 1).

Precedent for DEP action under CAFRA has been established through the Department's recent (February 18, 1976) conditional approval of a 2,600 unit extension to Crestwood Village, a retirement community in Manchester Township, Ocean County. Among other matters, DEP has requested information from the developer which would demonstrate a commitment to providing units at a range of costs allowing for some low-to-moderate income residents. The Crestwood opinion further states (p. 12):

"The Department shall refer the submitted housing information for review by the New Jersey Department of Community Affairs, Division of State and Regional Planning, which shall evaluate whether the proposed facility will make a contribution to meeting a fair share of the Township's share of the region's housing needs. This pre-condition will not be deemed satisfied until the Department of Community Affairs has commented on the proposed facility within the spirit of Mt. Laurel."

F. Housing for the Elderly

Housing for the elderly presents the Area and CAFRA with some particular short-term problems. First of all, however, it must be noted that the Area has helped considerably to alleviate New Jersey's shortage of housing for the elderly. The Area municipalities, in Ocean and Cape May in particular, have welcomed retired people and have been hospitable to projects which provide compatible surroundings and at least some measure of support services. This is a desirable situation, and one which should be encouraged--especially so long as other jurisdictions do not demonstrate comparable willingness to accept such communities.

Yet services are a problem, particularly health services. Parts of the Coastal Area have shortages of doctors and hospitals, and even resident services in some of the communities may not be sufficient to handle emergencies and the specialized needs of this age group. Several municipalities have large proportions of elderly among their population (e.g., Manchester Township had 38.1 percent of its population over age 65 in 1970; Ocean City, 25.8 percent; Lower Township, 22.3 percent). Many of these live outside the formal retirement villages--especially those in the shore communities--and must rely on the community and health services provided the general public which, out of season for a resort center, are not very extensive.

Of special concern are the substantial number of elderly poor--especially in Atlantic City and Asbury Park--many of whom lack both adequate housing and support services. As indicated below, their presence tends to correspond with the relatively low income levels in both these cities.

Table 26
Elderly Population in Asbury Park
and Atlantic City, 1970

	<u>Percent 65 and Over</u>	<u>Pop. Change 1960-1970</u>	<u>Median Income</u>
Asbury Park	19.9%	-4.8%	\$6,972
Atlantic City	24.8%	-19.6%	3,395
STATE	9.7	+18.2	11,169

Thus, as the demand for retirement housing continues to grow in the Coastal Area, the CAFRA guidelines will need to encourage the use, while paying particular attention to the adequacy of facilities and services for those to be housed.

Summary

During the interim guidelines period, housing will continue to be the primary source of land use demand in the Coastal Area. The guidelines will therefore need to address the densities and patterns of development proposed, to encourage concentrated growth and moderate densities along with a broadened housing supply and adequate facilities and services.

II. Energy

The second principal source of short-term pressure on the land and water resources will be energy-related facilities. The issues of location and scale involve matters vital to the state, as well as the Area, and have produced considerable controversy. Decisions of long-term significance may need to be made within the interim guidelines period.

Presently the Area has four nuclear power plants (one operating and three under construction) and two fossil fuel power plants. Proposals have been made for additional nuclear plants. Prospects of a liquid natural gas conversion facility may become serious. The possible location of on-shore support facilities for off-shore oil and gas drilling is already a regional issue--along with pipelines from the fields and a gas conversion plant if exploration is successful. Of the main energy-related facilities now being considered within the state, only oil refineries appear to be unrealistic contenders for sites within CAFRA boundaries. These will probably remain, perhaps with expansion, at their present sites on Raritan Bay along the Arthur Kill and along the Delaware River.

The proposed energy facilities could have substantial impacts on the Area's environment and would be of some significance to the regional economy. Ocean, Atlantic, and Cape May counties have been officially opposed to proposals for nuclear power plants within their jurisdictions, and Cape May County is opposed to Outer Continental Shelf (OCS) staging areas for oil and gas exploration. Atlantic City, however, wants the OCS support facilities to assist its economy. Siting decisions will be made by the state, through DEP.

In preparation for this decision-making, the Governor and the Commissioner of DEP have issued a Call for Information (December 1975) to all agencies and companies with intentions to locate or expand any form of energy-related facility within the CAFRA boundary. That request states:

DEP must consider the specific requirements that energy and energy-related facilities may place on the coastal zone, so that sites which may be needed for new energy facilities are not committed to incompatible uses in DEP's management strategy for the coastal zone. Wholly apart from the requirements of any particular projects, DEP must also consider the criteria, general physical requirements and other characteristics that render any area suitable for an energy facility. DEP must also determine the critical areas in the coastal zone from which some or all types of energy facilities should be excluded.

The information is to consist of:

- a. principles, requirements, and criteria, and
- b. specific plans, analyses, or other recommendations as to sites for the location or expansion of energy or energy-related facilities within the Coastal Zones defined by state or federal law.

Supporting material on physical and economic impact was also requested with submission information due by March 1, 1976. Those submissions received are currently being analyzed. Based on this material DEP will prepare and publish an estimate of energy facility demands in the coastal zone (including the 18 county area delineated by the federal CZM program) and adopt appropriate policies towards locating facilities or restricting areas from facility location.

Below is a summary assessment of the various facilities presently under discussion or consideration and of the issues they pose:

A. Electric Power Generation

Conventional Means

No plans are under consideration for expansion of the Tuckahoe or Atlantic City fossil fuels plants. At Union Beach in Monmouth County, New Jersey Central Power and Light Co. owns land adjoining a sewage treatment plant and may consider preparing plans for a fossil fuel power station. Emissions from fossil fuel power plants present hazards to air quality which are of particular concern in a resort and recreation region. Conceivably new technology, currently under development, could reduce the hazards and improve plant compatibility with the Coastal Area. Conceivably, also, gas turbine generation--currently used primarily as a supplementary power source--could be developed to contribute to base load or sustained electricity production. (While gas turbines have minimal air quality impact, they are heavy noise producers however, and thus present different kinds of environment quality concerns.) No serious proposals for either type are expected during the interim guidelines period.

Nuclear Plants

The Coastal Area has particular advantages for the production of nuclear power. It has ample sources of water from both Delaware Bay and the Ocean for cooling purposes--one of the most difficult requirements to meet with an inland location--and for heat dissipation of the cycled water. Potential sites, specifically Artificial Island in the Delaware Bay Sub-Area, are remote from population concentrations. On these sites, the obtrusive visual impact of the large cooling towers is minimized and the adjoining uninhabited area provides a deep protective buffer. No other New Jersey locations can claim these advantages, and nuclear plants may have to be located on or along the coast if the power generation need is verified.

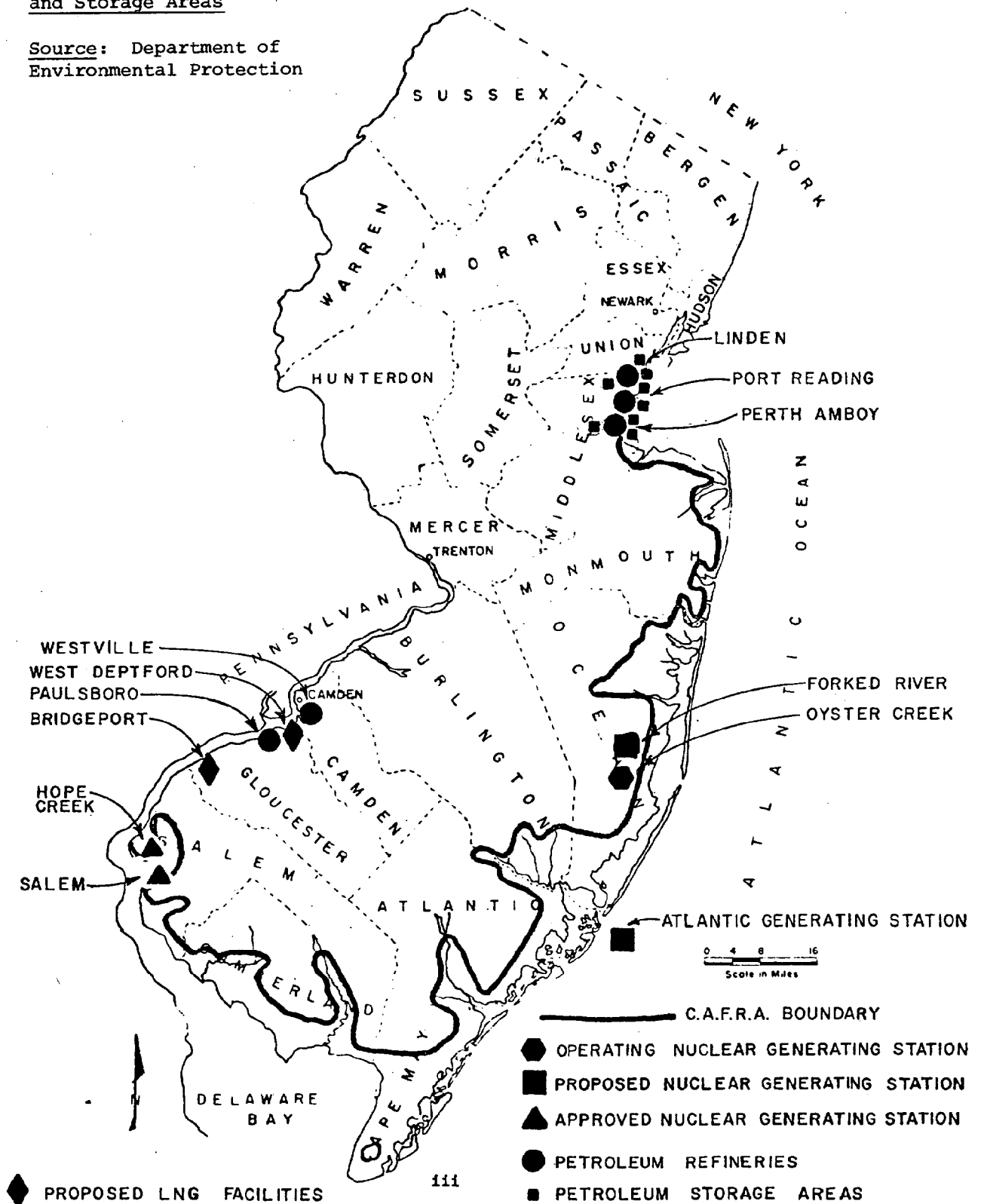
Recently the ocean itself has been proposed as the location for a nuclear facility. DEP is currently examining an application for a "floating" nuclear plant 2.8 miles off Little Egg inlet, some 11 miles northeast of Atlantic City. The plant would actually be anchored to the ocean floor and sheltered by a specially-built breakwater.

The present status of the nuclear facilities in the Coastal Area is as follows:

Figure 3

Nuclear Plants,
Petroleum Refineries
and Storage Areas

Source: Department of
Environmental Protection



	Size (MW)	Expected Completion Date	Status
Oyster Creek (Ocean County)	640	Operating	Operating
Salem #1 (Artificial Island)	1,090	1977	Under Const.
Salem #2 (Artificial Island)	1,110	1979	Under Const.
Hope Creek #1 (Artificial Island)	1,100	1983	Permit Issued
Forked River (Ocean County)	1,120	----	Under DEP Review
Hope Creek #2 (Artificial Island)	1,100	1984	Permit Issued
Atlantic #1 (Atlantic County)	1,150	1985	CAFRA Application
Atlantic #2 (Atlantic County)	1,150	1987	CAFRA Application

In addition to the plant sites themselves, controlled buffer area is required. The Salem and Hope Creek facilities together will consume about 500 acres of the 1500 acre Artificial Island, with the rest remaining for buffer areas. Artificial Island itself is stable fill, zoned for industrial use. Few, if any, similar "ready-made" sites for nuclear facilities can be found, without considering the draining or filling of wetlands, yet another issue to be examined in the review of nuclear proposals. Indeed, one reason for the proposed floating nuclear facilities (Atlantic 1 and 2) is to overcome the difficulties of finding a suitable site onshore, large enough and not environmentally sensitive (See Figures 3 and 4).

1. Environmental Factors. The environmental impacts of nuclear power plants and their safety considerations for workers and the coastal population are the two principal matters of state concern.

From the environmental standpoint, for most of the "facilities" requiring permits under CAFRA there are only two critical reviews; those of the municipality and the CAFRA permit process. For nuclear plants, as well as other energy producing facilities, numerous federal agencies are involved in environmental as well as other aspects of assessment and regulation. Federal environmental impact statements are required under the National Environmental Policy Act, with the Nuclear Regulatory Commission as the lead federal agency. NRC must be responsive to the judicial interpretation handed down in the landmark nuclear power plant case (Calvert Cliffs' Coordinating Committee v. AEC, 449 F. 2d 1109, 2 ERC 1779, 1 ERL 20346: D.C. Cir. 1971). This decision directed the federal government to consider not only radiological hazards; but thermal pollution; impacts on land, water, fish and wildlife; and indeed the full range of environmental consequences due to construction and operations.

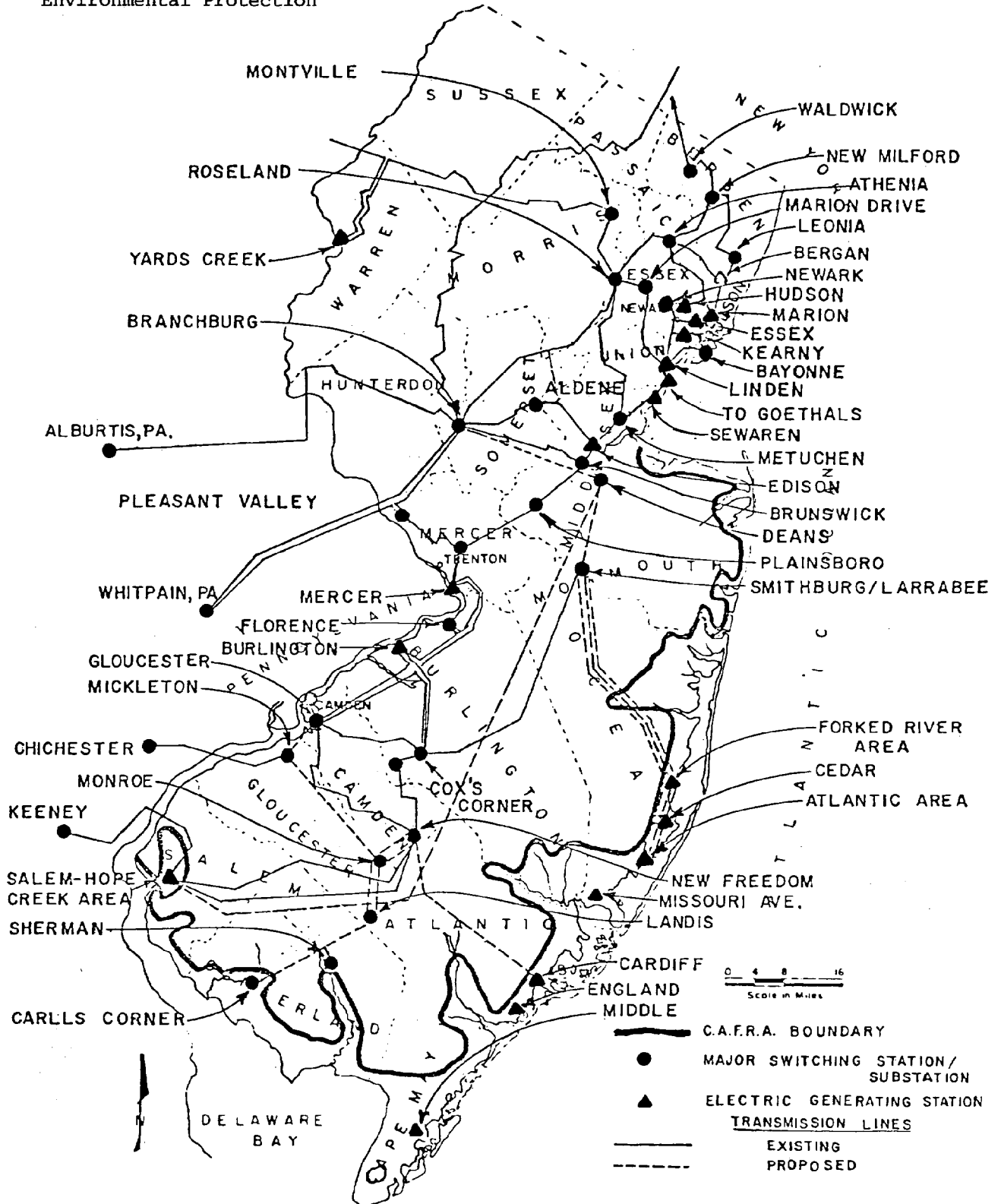
Under NEPA, New Jersey's DEP is a review agency for the draft impact statement, so it has some influence on the final assessment. It can, of course, deny the site location or give conditional approvals under CAFRA. Such conditions have been set in the recent DEP approval of the Hope Creek plant on Artificial Island.

Citizen interest groups have challenged the Hope Creek approval, although the buffered location of the site has produced less in the way of controversy than has been mounting in response to the floating off-shore facility proposed near Atlantic City and the Forked River proposal in Ocean County. Proponents of nuclear plants contend that their environmental impacts will

Figure 4

Electric Generating
Plants and Trans-
mission Lines--1976

Source: Department of
Environmental Protection



be minor or can be mitigated. DEP has agreed, in respect to Hope Creek, and has considered the facility to be of critical state-wide importance. Similar issues must be evaluated for decisions on the floating plant and the Forked River project.

Issues will also arise in respect to the cumulative effects of nuclear energy facilities on a single site (Artificial Island) and in relatively close proximity to each other (Oyster Creek and Forked River). These must be considered in future environmental reviews, both by the Federal Government and by the state.

In addition to the plant sites themselves, the transmission lines become a matter of environmental and area-wide significance. Corridors for Salem, Hope Creek, and Forked River have been established, but issues will undoubtedly arise in respect to transmission facilities from an off-shore plant which must traverse the prime recreation area of the coast.

2. Safety and Land Use Considerations. Safety considerations, for plant workers and for individuals, families, and businesses in the vicinity of nuclear plants are among the primary matters addressed in the federally-regulated applications and environmental impact statements. DEP, moreover, has created its own monitoring system for continuous radiation surveillance at nuclear plant sites to supplement protective measures. In describing this system, Commissioner Bardin stated on March 10, 1976

(this system)..has the capability to detect the development of malfunctions within the facility which, over the course of days or weeks, might result in significant releases of radiation into the local environment. Such releases can be detected even at levels well below those currently allowed by NRC standards as well as levels approaching these standards. This State monitoring and reporting network is totally independent of any on-going monitoring and reporting activity engaged in by any utility or by any federal agency.¹

While DEP will carefully assess all nuclear applications for their safety considerations, one aspect of the problem has taken on particular significance: that is the need for a safety zone around the installations. Even though the low population density of areas near likely coastal sites makes them particularly advantageous for the nuclear plants, DEP recognizes that people live and land uses exist in these areas. Development pressure, in Ocean County in particular, has begun to be felt in the vicinity of the sites (near Oyster Creek and Forked River where considerable nearby development does exist). Although the Nuclear Regulatory Commission and its predecessor AEC has had a national policy to limit human population within reasonable limits of nuclear facilities, this policy has not been implemented and indeed the dimensions of "the reasonable limits" and the types of densities and land uses considered acceptable within them have not been defined by the federal authorities.

¹Testimony before the Committee on Energy and Environment, New Jersey Senate.

This situation has caused the Department to take the following actions:

1. Commissioner Bardin appointed in March, 1976 a special task force headed by Assistant Commissioner Paulson to assess the safety hazards and appropriate land use requirements for areas in the vicinity of the Oyster Creek and Salem plants. The task force will include state officials and will be assisted by municipal and county governments. It is to evaluate: population density; meteorological characteristics; engineering characteristics of the facilities; the probability and the potential of radiation releases from various types of accidents; the potential human consequences of various types of accidents under characteristic weather conditions; the status of emergency plans for these facilities; applicable federal, state, and local laws and regulations; and compatible land uses. It will then make recommendations to the Commissioner for further controls as appropriate.
2. Pending the task force report and follow-up decisions, the Commissioner has declared a moratorium on the issuance of CAFRA permits "for the construction of residential developments or other heavily occupied facilities, any part of which falls within 4 miles of the Oyster Creek facility and 6.6 miles of the Salem facility". In his directive of March 16, 1976 establishing the moratorium, the Commissioner continued:

The distance for Oyster Creek is the distance stipulated in the emergency plan developed by the Bureau of Radiation Protection for countermeasures (such as evacuation, temporary sheltering, etc.) for certain serious but not catastrophic accident conditions. The distance for Salem is the best judgment of the Bureau at this time as to the analagous distance for the Salem facility. Both of these zones have been established based on regulations and guidelines from the U.S. Nuclear Regulatory Commission and the U.S. Environmental Protection Agency.

The Department anticipates that policies regarding land use controls will emanate from the task force review and that these policies will influence siting and buffering decisions to be made for nuclear facilities whose applications are pending.

3. Economic Significance. When operational, the nuclear plants employ 100-150 people, which would amount to a total of under 1,000 if all the proposed facilities are built. The primary employment effects come during construction, however, when up to 3,000 workers may be involved in building each facility. A peak year, according to the above schedule, could be in the early 1980's and could involve almost 10,000 construction workers. Many would commute long distances to the site from outside the Area, and the peak years would be after the interim guidelines had expired. Nevertheless this is an extremely large number of workers, and serious thought should be given during DEP's preparation of an environmental strategy to deal with impacts on the Area's housing supply and support services. To our knowledge the various environmental statements underway or submitted have not considered the cumulative economic and social effects of either the construction or permanent labor force.

Perhaps the most significant local economic effects will be on the local tax base, for, under present legal structure, the bulk of the multi-million dollar assessments for the facilities go only on the tax rolls of the municipality in which the facility is located.

B. Liquified Natural Gas

Liquified natural gas (LNG) may be imported to the Philadelphia-Camden area by tanker. A processing operation must be established to convert the fluid back to its gaseous state and send it to market by pipeline. While plant sites have been proposed along the Delaware River in existing industrialized areas, DEP and other agencies have been especially concerned about the additional tanker traffic that would be generated, the resultant increased danger of mid-river collisions, and safety hazards for the surrounding population from escaping gas.

This has led to some consideration of locations along Delaware Bay itself which could be remote both from population and normal shipping routes, provide adequate buffer areas, yet could afford tanker access. Both plant/storage locations and pipeline corridors would be matters for concern.

At present, no specific proposals are under study along the Delaware Bay. Any prospective site could raise the issue of wetlands protection versus developments of state-wide significance; but loss of wetlands and impacts on other natural features could conceivably be minimized with careful plant and pipeline design.

Any LNG facility would also be subject to Federal regulation and environmental review via the Federal Power Commission, and DEP would have important input into conditions for an approved plant design and pipeline corridor.

As with the nuclear plants, an LNG facility may require several hundred acres for siting and extensive additional land for buffering. Construction work force would be about 250 for a few years, but permanent employment might be only 100 people.

C. Outer Continental Shelf (OCS) Oil and Gas Exploration and Production

OCS oil and gas drilling could have substantial impacts on the economy and the environment of the New Jersey Shore. Although actual production drilling is not anticipated until the 1980's, the first leasing of over 500,000 acres is scheduled for Summer, 1976. Support facilities for exploratory drilling will be sited, if not established, during the interim guidelines period. Pipeline routings will probably not be selected until or unless the productivity of the fields has been proven with exploratory drilling. However, the pipeline issue may become of concern to DEP during preparation of the CAFRA environmental management strategies. (Present federal planning is based on pipelines rather than tanker transfer of oil and gas from the drill sites to mainland refineries. Existing or expanded refineries in New York Harbor and the Delaware River will probably be used.)

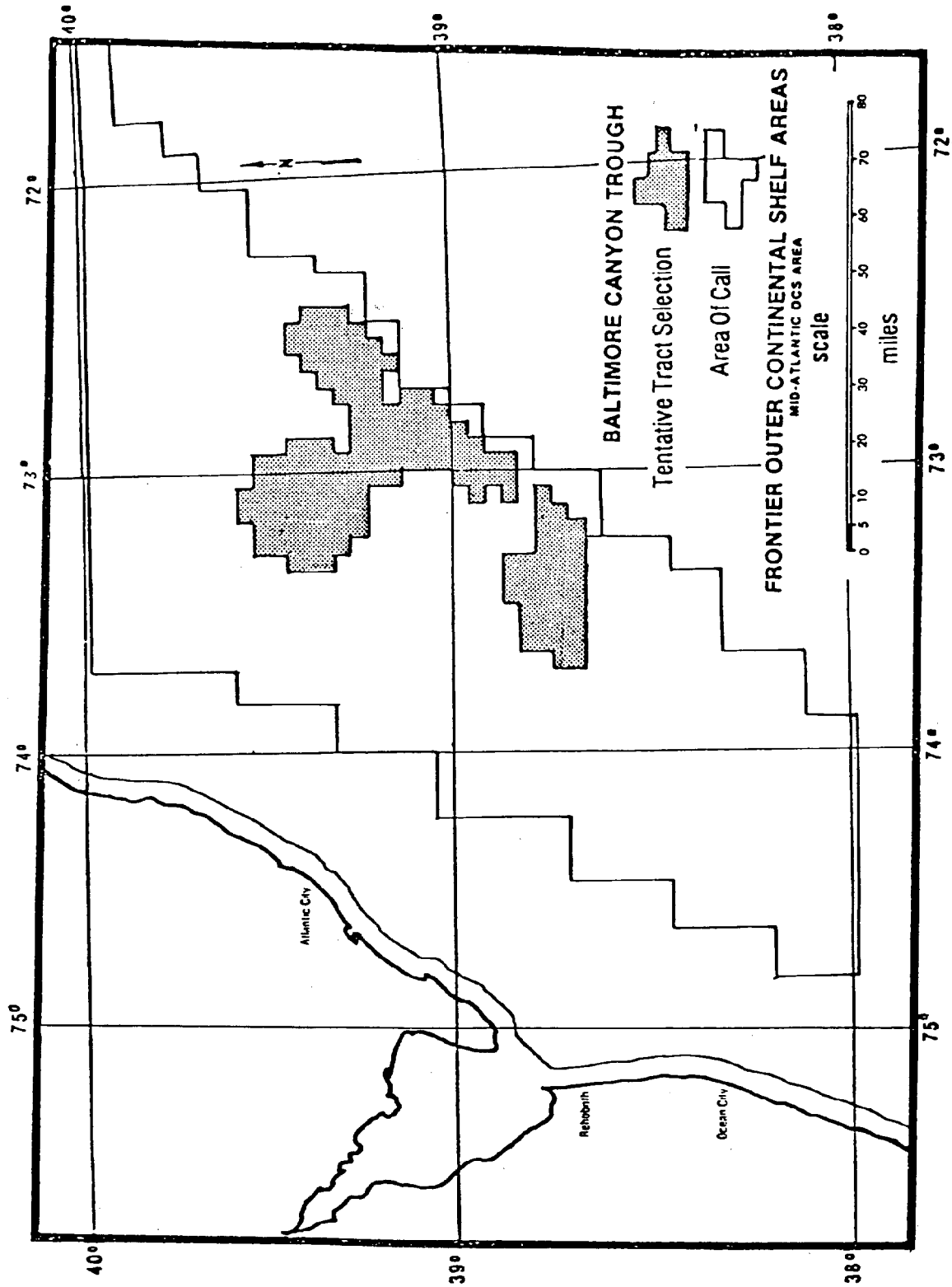
Table 27
OCS Requirements

Table I- 1. Acreage and Facilities and Activities Expected
to be Required to Develop Hydrocarbon Resources
Within the Proposed Sale Area

	<u>This Proposed Sale</u>
a. Acres proposed to be offered	876,750
Acres anticipated to be leased	523,756
b. Wells	
--exploratory	60-575
--producing	200-880
c. Rigs (maximum working at one time)	
--exploratory	5-20
--development	5-20
d. Platforms	10-50
e. Miles of Offshore Pipeline Corridor	50-570
f. Terminal/Storage Facilities	1-4
g. Onshore Operations Bases	1-4
h. Gas Processing Plants	3-8
(Units with capacity of 300 to 500 mmcf/d)	
i. Tankers (if utilized)	Contingent upon technologic and economic considerations; unknown at this time.

Source: U.S. Department of the Interior, Draft Environmental Statement,
Proposed 1976 Outer Continental Shelf Oil and Gas Lease Sale
Offshore the Mid-Atlantic States, 1975, vol. 1., p. 16.

Figure 5



Source: U.S. Department of the Interior, Draft Environmental Statement, Proposed 1976 Outer Continental Shelf Oil and Gas Lease Sale Offshore the Mid-Atlantic States, 1975, vol. 1., p. 2.

Figure 5 indicates the location of the proposed leasing areas, the closest about 60 miles offshore from the New Jersey coast.

The most definitive information about the leasing program, anticipated yields, and expected environmental and economic impacts was released in December, 1975 in the form of a Draft Environmental Statement prepared by the Bureau of Land Management of the U.S. Department of the Interior.¹ Public hearings were held on this environmental statement in Atlantic City on January 27-28, 1976. It was severely criticized on numerous grounds both by Governor Byrne and DEP, as well as other agencies.

Table 27, from the statement, summarizes the anticipated character of the leasing program and its attendant facilities.

1. Land Use Impact. The following equivocal passage from the draft EIS addresses the anticipated on-shore land use requirements of the program.

...a total of 160 to 645 acres could be required regionwide for OCS-related facility development. Of this acreage, between 70 and 265 acres might be required in coastal areas. However, only operations bases and a few small service companies, which require docking facilities, would need to be located in the shoreline zone itself. While pipeline pumping stations need to be located in coastal areas, the storage facilities do not have to be located in coastal areas, but could be located inland from the pumping station. Storage facilities are, however, normally located adjacent to the pumping stations.

...it is anticipated that operations bases and pipeline terminals are most likely to be developed in New Jersey or Delaware, or in the case of operations bases, possibly the New York and New Jersey Port area. The New York and New Jersey port area, parts of Monmouth County, and inland parts of Cumberland County have areas of industrial buildup. However, the south New Jersey shore counties and Sussex County, Delaware, do not have concentrations of industrial buildup. Isolated industrial uses and/or industrial zoning are found in these counties, however.

If required onshore bases or oil storage terminals are located in areas where industrial land uses and vacant parcels of suitable industrial land exist, no adverse land use impacts should result. Similarly, if those developments take place in areas where no industrial bases presently exist, but where developable land is available and such development is desired, impacts should be positive. Adverse impacts to land use patterns

¹ While the BLM statement is the most definitive federal review, early in 1976 the Middle Atlantic Governor's Coastal Resources Council released a study by Resource Planning Associates, Inc., on Identification & Analysis of Mid-Atlantic Onshore OCS Impacts. This study compared the BLM statement with other governmental and private reports published since 1974 and pointed out numerous differences; underscoring the lack of certainty involved.

or goals could occur if such facilities were to be allowed in areas where industrialization or industrial expansion are not desired.¹

2. Employment Impact. Again, according to BLM:

Up to 4,200 to 15,400 jobs could be induced, by the action of which up to 900 to 3,600 would be primary jobs. The population increase associated with the induced jobs could be as much as from 5,600 to 20,000 persons for the region as a whole.²

It is significant that throughout the environmental statement the BLM recognizes that state government, because of its control of land and water to the three-mile limit, will have the definitive say over where on-shore facilities will be located and where the pipeline corridors will be established. It defers to each state's Coastal Zone Management Program for these decisions.

Two very important conclusions in this regard may be drawn from the draft environmental statement.

1. The range of land use and employment impact estimated is so broad as to be of little guidance.
2. The range of sites for onshore facilities--except for the refinery locations--is also so broad that competition among jurisdictions and controversy are likely before definitive decisions are made.

BLM has essentially identified the entire coastline from Long Island down to Virginia as possible locations for support facilities of various kinds. A "typology" of communities has been established based on present levels of population, economic activity, and income, with some assessment made of positive and negative impacts--but no preference indicated. Thus while the drilling sites have been specified, the nature of on-shore impacts and the locations where these impacts may fall are still amorphous matters indeed.

3. DEP Policy. Although official policy towards location of OCS-related facilities has still to be formulated, certain policy issues are already apparent and require early resolution.

a. Support facilities. Atlantic City is on record as desiring the support facilities. Land and water locations are available here which--in principle--might not interfere with the city's primary resort and recreation activity. The new employment would aid this economically depressed area and reduce its dependence on the resort business. The installations would contribute to the tax base. Although other locations along the coast are under consideration, they have been opposed by county governments and DEP as incompatible. If OCS exploration support facilities

¹OCS-EIS, Op. Cit., pp. 220-221.

²Ibid., Vol. 2, p. 380

are to be located in New Jersey, moreover, a single site area serving all the relevant companies is preferable to dispersing both economic and environmental effects along the coast. How such a facility could be owned and managed, given the number of companies involved would be an issue.

b. Pipelines. Pipeline location is an important, and potentially controversial issue. From the Baltimore Canyon tracts, logical pipeline routings to the New York harbor refineries could cross the CAFRA boundaries. Conceivably, more than one routing would be needed, both for oil and for gas. This can mean passage through the barrier islands, beaches, and wetlands. Although a pipeline corridor itself is less than 100 feet wide, and disruption in construction might be minimal, the BLM statement indicates breaks and spills are possible during pipeline operation. These could have adverse consequences for the natural features of adjoining areas.

Balanced against the adverse consequences of pipelines crossing the Coastal Area is the cost of less direct routes and the oil companies' contention that the majority of pipeline breaks from OCS operations elsewhere have been caused by anchor dragging of large ships. Pipelines that avoided Coastal Area crossings and were diverted to the Delaware and Raritan Bays, would thus become more vulnerable to accidents from these major shipping routes.

c. Gas processing. According to the draft environmental statement, unlike the oil refineries, the gas processing facilities must be located close to where the pipelines reach the coast, although not necessarily on the shore. The companies do not yet know whether the OCS gas is of the odor-producing variety. If so, the processing operations would produce an odor problem and contribute to air quality degradation.

d. Other environmental and economic impacts. If oil refineries are kept from the Coastal Area, then a whole range of adverse impacts need not be considered. However, the lack of assessment of precise impacts on housing, infrastructure, and services means that DEP should require this evaluation prior to any final decisions on the location of staging areas for exploration or production. The BLM draft environmental statement is clear, however, that no mitigating measures are currently being considered by the federal government in respect to economic or social impacts produced by the OCS program. As the ultimate guardian of the Coastal Area and the resources of its communities, therefore, DEP will have to pay particular attention to this matter before reaching any final decision on siting.

e. The uncertainty factor. Despite the extensive investigation made thus far, there is reason to believe that the oil and gas companies do not really know the nature and volume of the resources in the lease area. Some contend that certain knowledge will not be forthcoming until full-scale drilling begins. This uncertainty may well be a principal reason for equivocation about on-shore needs by both the federal government and the

companies. For clearly a big strike will require more support on-shore than a small one; and the companies are definitely reluctant to commit themselves either to locations or capital projects at this time. Given the prospective impacts on New Jersey, it will be DEP's role to elicit as much information as possible and to identify all of the likely on-shore development options before making any decisions on the siting of staging facilities, pipelines, etc.

III. Other Short-Term Development Pressures and Issues

Housing (with supportive public services) for new population, and energy facilities will represent the principal short-term pressures on the land and water use of the Coastal Area. Although of less urgency, other matters may also come before DEP during the interim guidelines period.

A. Transportation

The principal short-term transportation issues deal with new highways and with the extension and improvement of existing highways that link the Coastal Area with sections of the New York-Philadelphia urbanized region.

The most controversial project is the proposed Toms River Expressway. It is designed as a toll road, to be built by the New Jersey Turnpike Authority. It would extend from the New Brunswick area, would parallel the Garden State Parkway and then connect to the Parkway at Route 9 in Toms River. The Governor's Capital Needs Commission of 1975 has stated that the Toms River Expressway would:

- provide better truck access to the shore area; but
- require higher tolls on the Garden State; and
- be in competition with the Route 18 freeway under construction.

Of most concern to the Coastal Area, this project could put increased pressure for growth on Ocean County by still further reducing travel time to the metropolitan centers. Right of way has been acquired, but the project has been halted indefinitely by the Governor due to mounting opposition.

Interstate I-195 from Trenton currently terminates near the western border of Ocean County. Plans have been readied for a 17-mile extension to Route 34 at Wall Township in Monmouth County. Once completed, this highway will add significantly to the growth prospects of Ocean and southern Monmouth Counties.

Route 18 is partially completed as a dualized highway from New Brunswick to Brielle at the southern coastal tip of Monmouth County. Construction will continue for a number of years.

In the Delaware Bay area and Southern Shore, Route 55 is planned as a dualized highway from Camden to the southern end of the Garden State Parkway in Cape May. A small portion has been completed between Millville and Vineland in Cumberland County. Once built north and south of that portion, this road will significantly add to the accessibility of Cumberland and Cape May Counties from the Philadelphia and Wilmington areas.

Under CAFRA, DEP will review each of these roads for final permit. While transportation advantages may be clear, the secondary, or growth inducing impacts of such facilities are not normally considered in

highway planning. Along with the required environmental impact statements, DEP can request such analyses as a basis for determining whether these or other new major highway facilities will be compatible with the preservation and enhancement of the Coastal Area. It is preferable, however, to hold back on any new inter-regional highway construction until the implications of these facilities can be factored into DEP's formulation of an area-wide environmental strategy.

Some consideration is also being given to improved rail service to the Coastal Area and to internal public transportation systems (particularly in Ocean County). Insofar as DEP's policy to urge energy conservation and relieve dependence on the automobile can be applied to mass transportation, these developments should be encouraged in any possible way.

B. Industrial Growth

It is quite clear from the present land use pattern, that the CAFRA Area has not been of major interest to heavy industry and that its complement of light industrial facilities is a modest one.* Industrial developers have concluded that other areas in New Jersey are more suitable.

Indeed, to April 23, 1976, only eight proposals for industrial projects have been submitted for CAFRA permit application. Three have been in Ocean County, two in Atlantic, and one each in Monmouth, Cape May and Cumberland.

Ocean County is actively seeking an improved industrial base to become more self-contained and reduce its high proportion of commuters. While industrialization has been seriously questioned in Cape May as incompatible with its resort-based economy, the industrially zoned area around Cape May Airport has been excluded from the CAFRA boundaries by the legislation. Atlantic City, which already has some industry (primarily in apparel and food processing), continues to seek for additional development to relieve its chronic unemployment.

The Department of Labor and Industry as part of its continuing activity in support of CAFRA will be examining the industrial potential of the Coastal Area and preparing policy proposals.

It is unlikely that heavy industry will become a development issue during the interim guidelines period. In view of the general downturn in industrial growth, it is also unlikely that any major amount of light industry will seek to locate within the region during the near-term future. For those operations which do find the area desirable, environmental impact questions will be paramount in CAFRA reviews. Equally important would be the same considerations affecting the

*Exceptions such as the Toms River Chemical Company and glass manufacturers in the Delaware Bay Sub-Area are, of course, noted.

location of housing, the need to reduce the sprawl character of new development in the Area and to concentrate new enterprise in a manner to maximize the utilization of existing and planned public services. Some priority to Atlantic City area locations might also be considered in view of the continuing need to improve that section's economic picture. For while Ocean and Monmouth Counties' commuters have some options for employment out of the CAFRA Area, options in the Atlantic City area are extremely restricted.

C. Regional Shopping Centers

A new major regional shopping center is currently under construction near Toms River. Given the slowing in the area's population growth, we are doubtful whether any additional regional facilities would be justified during the interim guidelines period. Certainly the potential impact of such facilities on reducing the viability of existing commercial areas in established communities should be considered in any review, along with the basic issues of environmental impact and adequacy of public services.

D. Offices and Other Service Employment

Although growth estimates have not been possible to establish for this analysis, it is probable that office and other services employment will exceed the growth in industrial employment within the region during the foreseeable future. This has certainly been the experience of the recent past. Insofar as these facilities are located in established business areas, or their extensions, they would be basically compatible with the principle of contained growth for the Coastal Area. As with housing, scattered development of facilities would contribute to the expansion of sprawl patterns and provide added drains on public service capability.

E. Special Resort-Oriented Facilities: Hotels and Camp Grounds

Two forms of special resort-oriented facilities are likely to be candidates for Coastal Area locations during the short-term future.

Applications for about 2,400 hotel and motel rooms have been submitted. Principally the same concerns would apply to hotels as to higher density housing in the resort sections of the coast--the visual impacts of high density facilities, their traffic generation, and the degree to which their location would impact environmentally sensitive features of the ocean, beaches and bays.

In view of the increased national interest in camping and the increased cost of vacations, proposals for camp grounds in the Coastal Area may intensify. Applications for about 1,500 camp sites have been submitted thus far. Camp sites are a particularly desirable use for open land. They do not represent an irreversible development commitment on the land, and contribute to maintaining a rural quality. So long as vehicular access is adequate, there should be few location constraints within the CAFRA boundaries. Primary problems will be those of public

health (adequacy of water and sewage disposal), along with the impact of these facilities on the water quality of the nearby area*

F. Military

Within the Coastal Area itself, there appears to be little likelihood of the expansion of existing military facilities or the location of new ones during the short-term future.

G. Economically and Physically Depressed Areas

The Coastal Area has pockets of poverty. Long-term, endemic problems of unemployment must, however, in this setting be distinguished from seasonal resort-based fluctuations where some wintertime joblessness tends to be accepted as a basic fact of living. The Cape May area is a case of the latter, where opposition to more diversified economic activity has focussed on its threat to the established resort/rural character. Atlantic City is, however, an example of a more intractable situation where, even with summertime relief, unemployment is a continual issue. In January 1975, for instance, Atlantic City had a seasonably adjusted unemployment rate according to the Bureau of Labor Statistics of 12.8 percent, compared with a state-wide figure of 10.5 percent. Unemployment is a problem throughout the state as well as the Coastal Area, but special measures may be necessary to support communities where it is most severe.**

In Atlantic City, as well as Asbury Park, Keansburg, Long Branch and other older settlements, some central core districts and residential neighborhoods have physically deteriorated. Redevelopment would be economically and physically beneficial to these communities and would make use of existing water, sewer, road and other public facilities which still have useful lives. Some of these communities have prepared and formally adopted urban redevelopment programs. CAFRA provides DEP with economic development as well as environmental protection responsibilities. In the same way as the CAFRA permit review power can act as a restraint on new development, that power, if exercised flexibly could be utilized to encourage new growth in those sections of the Area which need it most. As industrial projects--OCS support facilities as well as others--are proposed, and tangible reconstruction schemes formulated, the Department could establish a priority for rebuilding the economic and man-made physical structure of these communities. Recognizing that the environmental quality objectives of the

*The reasons for denial of one camp grounds' permit in Cape May.

**Unemployment analyses and comparisons have not been made as part of the interim guidelines study, and Atlantic City is used as a well-known and clear example. If DEP adopts a development priority for depressed areas under the guidelines, we would anticipate more definitive industry and employment studies as part of the Department of Labor and Industry's continuing responsibilities.

legislature must be maintained, new projects for these communities could still be encouraged. They could be assisted by expeditious permit processing and by requiring environmental impact information minimally sufficient for the Commissioner to make the required findings under the Act. The guidelines would establish criteria for screening the communities to be eligible for such priority treatment.

It is important to stress, however, that flexibility in environmental impact information should not extend to energy-related facilities--even when sites in depressed areas are given priority. For example, if the presently proposed off-shore nuclear plant is approved and if OCS support facilities are likely candidates for an Atlantic City location--then the Atlantic City area could receive environmental and economic impacts from both. On the economic side, two major sources of jobs and revenues could be brought to bear. On the environmental side, serious questions of thermal pollution, recreation area and harbor interference, and pipeline impacts might well be raised. The cumulative impacts of these facilities on the coastal resources and the housing and service base of the Area would need to be assessed. It would be inappropriate to incur serious resource hazards and dislocations in the name of economic development without first making a comprehensive assessment of implications and mitigation possibilities.

SECTION FIVE: Basis and Rationale for Guidelines

Synopsis

This section relates the anticipated land and water use demands to specific short-term DEP objectives under the CAFRA legislation. The rationale for each suggested set of guidelines is then spelled out, along with the substance of the proposed guidelines. Examples are given of guideline application to particular sub-regional issues. Suggestions are made as to how the guidelines can be readily disseminated. The guidelines and dissemination policies are expressed here as consultant recommendations whose precise wording may differ somewhat from the policy document to be adopted and published by the Department of Environmental Protection.

Objectives

A clear establishment of objectives is essential to any formulation of policy. The interim guidelines will represent Departmental policy during the period when alternative management strategies for the Coastal Area are being defined and a final strategy selected. In order to establish specific land use and density guidelines for that period it is necessary to spell out the basic objectives which these guidelines must serve.

The CAFRA legislation itself stated broad environmental and economic objectives for the program. In order to serve as operational bases for guidelines, however, these objectives must be refined in light of the actual short term development prospects and pressures on the Coastal Area identified in the preceding sections. Below are five such operational objectives supported by DEP as the basis for formulating interim land use and density guidelines.

A. Protect the Air, Land and Water Resources

These are the key physical features which establish the Coastal Area's special significance and which warranted passage of the CAFRA legislation. They are the features which contribute to the Area's importance for recreation, to its productivity for agriculture and fisheries, and to its unique ecological character. These features include the beaches and the ocean, tidal and inland wetlands, flood plains, prime agricultural land, white cedar stands and other prime vegetation, estuarine areas, bays, the intra-coastal waterway, streams and stream corridors, wildlife habitats, and man-made historic areas of irreplaceable character. Developments which may cause irreparable harm to the air, land and water resources of the Coastal Area should be prevented. Those actions should be fostered which enhance enjoyment or use by the general public of these resources or which contribute to their natural productivity.

B. Accommodate Expected Short-Term Population Growth and Supporting Activities

Departmental review of past trends and present conditions indicates that construction of at least 20,000 and up to 30,000 dwelling units could occur within the Coastal Area during the 1974-1980 period. This represents a somewhat lower level of growth than over the 1970-1974 period. It includes seasonal and retirement housing, as well as year-round family housing. Residential development, along with necessary public facilities and commercial support activities, represents the principal land use demand in the short-term future.

The Coastal Area contains ample developable land that is not environmentally vulnerable to accommodate this anticipated growth. In accommodating this new development, however, particular stress should be given to the needs for low-to-moderate income housing and housing for the elderly. Proposals for new residential projects which provide for a broad range of income levels will be welcomed during the interim guidelines period, especially those which locate such housing with good access to employment areas. Encouragement of a broadened housing supply reflects long-standing state governmental policy. It is consistent with the New Jersey Supreme Court's "Mt. Laurel" decision which requires all developing municipalities to absorb a fair share of regional housing needs. (So. Burl. Cty. NAACP v. Tp. of Mt. Laurel, 67 N.J. 151, 187 (1975).

C. Create Efficient Settlement Patterns

Accommodation of growth should not mean acceptance of past practices which have endangered the coastal environment and have led to shortages of public services and excessive municipal, state, and federal costs in providing these services. Recent residential development has been largely at very low density involving extensive use of land. Much of this growth has been discontinuous, isolated developments, leapfrogging over still-vacant land adjacent to settled areas. These low densities and sprawl patterns have led to high public service costs, have prevented organization of efficient public transit and are extremely wasteful of energy.

At the same time, in some coastal resort communities considerable recent development has been in the form of high-rise, high-density condominiums. Although conserving of land, the high-rise structures have brought adverse visual and traffic impacts, and have reduced public enjoyment of the beach resources.

These past practices amply demonstrate that the form of physical development in the Coastal Area has environmental and economic significance to the State. Providing guidance to future development densities and patterns is therefore of importance to DEP in accomplishing its CAFRA mandate. Thus the creation of more compact settlement patterns, offering a broader distribution of density levels and minimizing public service costs, will be a prime objective during the interim guideline period. Departmental policy to foster this objective will extend to the location of sewers, to waste treatment facilities and to roads, as well as to housing and employment-generating activities.

D. Stimulate Growth and Rehabilitation of Depressed Areas

Some communities within the CAFRA Area have severe economic difficulties. To the greatest degree possible, new employment-generating uses such as light industry or offshore drilling support facilities should be directed towards these communities. At the same time, extensive residential and commercial redevelopment and rehabilitation should be induced to improve housing conditions and provide competitive business advantages. Through flexible treatment of informational requirements in CAFRA applications, the DEP permit-issuing power will be utilized as an incentive. Atlantic City, Asbury Park, Keansburg and other centers which suffer special problems of poverty and physical decline will have special priority for development within the Coastal Area.

E. Accommodate Major Coastal-Dependent Energy-Related Facilities

In the short-term, other than housing and support facilities, the most likely growth pressures will stem from energy-related facilities: nuclear and fossil fuel power plants, liquified natural gas re-gassification plants, and Outer Continental Shelf (OCS) staging and support complexes. Considerable controversy surrounds present proposals for many of these facilities. All the evidence is not yet in hand, but certain projects may well be deemed of statewide and national importance and dependent on locations in the Coastal Area. Reasons for dependency would be required access to the waters of the ocean and bays and availability of sufficient land area in specific locations to provide protective buffers for resident population--a setting not available elsewhere in New Jersey. At the same time, however, some of these facilities may induce impacts on wetlands, may create certain environmental hazards, and may place strains on housing and community services. Only with appropriate advance planning and commitments to mitigating actions should actual development be permitted. The Department will require such planning and commitments as the basis for any location approvals.

In December, 1975, the Governor and the Commissioner of DEP issued a "Request for Information" to all agencies and companies with intentions to locate or expand any form of energy-related facility within the CAFRA boundaries. When that material has been received and evaluated, the Department will prepare and publish an estimate of energy facility demands in the Coastal Zone (including the wider area under study through the federal CZM program) and will adopt appropriate policies towards locating facilities or restricting areas from facility location. Pending completion of this review, guidelines on the location of energy-related facilities will be considered as contingent and subject to early modification. To underscore their contingent status, the energy guidelines will be published by DEP as a separate document.

Guidelines I: Major Facility Not Currently Present in the Coastal Area

The interim guidelines are intended as a screen through which the most suitable uses and densities for the Coastal Area can be identified and their establishment expedited. Activities for which a CAFRA location is essential or desirable would--under the framework of objectives above--be approved contingent on their specific site selection, development plan, environmental impact mitigation or other criteria expressed in the guidelines.

Some form of initial dependency test would be a useful exercise in guideline information. This is especially true because CAFRA's permit review authority extends over an extremely broad range of facilities and uses. Focus on establishing development and environmental standards and criteria could be sharpened if some facilities types which are clearly not dependent on a Coastal Area location could be simply held out of concern for the next two years. This would enable primary staff effort to concentrate on a framework for accommodating activities directly related to the Coastal Area setting--a difficult enough task in itself. In the event that other locations can serve the activity equally well or better, there would be no need to complicate the coastal environment during the interim guidelines period by attempting to accommodate the facility. Questions as to whether the action is discriminatory or a "moratorium" could be handled by demonstrating availability of economically and environmentally preferable locations in New Jersey outside the CAFRA boundaries.

One way to perform a dependency test would be to identify a series of factors or attributes inherent in the land and water of the Coastal Area and its relative accessibility to transportation lines and markets. Then each of the facilities over which CAFRA has jurisdiction could be examined as to their basic locational requirements. A scoring system could be devised and those which ranked low on dependency could be identified for diversion to other locations should an application for permit be submitted. In our opinion, however, any unilateral identification of coastal attributes, without widespread consensus from technicians in a number of fields, would be fairly debatable. More important, we believe this form of matrix analysis would be unnecessarily complex in the formulation of interim guidelines.* A far more simple and direct technique is available.

The test can be performed by examining the present land use pattern of the Coastal Area in relation to the array of facilities over which

*Such an evaluation might be appropriate in formulating the final environmental strategy. The State of Delaware, for example, commissioned Battelle Memorial Institute to perform a detailed process and location analysis of 400 industry types to aid in identifying which would have most adverse impacts on the coastal environment as part of the state's coastal management program.

CAFRA has been given jurisdiction. Those facility types would be screened out which are:

- A. Currently not represented by specific, operating physical installations within the Coastal Area;
- B. Currently located and operating on sites elsewhere within New Jersey, either in coastal locations outside the CAFRA boundaries or inland.

In Section Two we depicted the land use pattern as primarily residential and recreational. Commercial centers and highway strips service the residential and recreational areas. The industry that exists is primarily low-intensity, light manufacturing in nature. Power plants, both nuclear and conventional, are represented in this Area.

But there are no oil refineries, no heavy industrial operations such as rendering plants, metal processing, textiles, no major commercial ports and marine terminals. Each of these represent major land-consuming activities which generate substantial negative environmental impacts on surroundings, wherever they may be. Each of these exist in New Jersey, but in coastal locations outside of the CAFRA boundaries and considerably closer to the metropolitan areas of Newark-New York, and Philadelphia-Camden-Trenton. Expansion room for additional facilities may well exist in these locations, either through re-development or aggregation of additional land, and considerable infrastructure has been installed to service them.

Certainly based on past experiences, these facility types do not evidence dependency on a Coastal Area location. To the contrary, ready access to metropolitan services and labor, the highway and rail network of the megalopolis, industrial-zoned land, as well as water access, have been predominant factors in location choices.*

Our assessment of short-term land use demand indicates that serious proposals to locate such facilities within the Area over the next five years are highly unlikely. But in the event of such proposals, the weight of evidence suggests that locations outside of CAFRA would be preferable. These would clearly represent an intrusion, affording serious environmental impacts and serious challenges to maintenance of the existing land use pattern in the region.

In our judgment, short-term management of growth within the Area can be aided by excluding these major facilities types not now represented

*It is interesting to note that early drafts of the CAFRA legislation covered a much larger area than finally selected and included some of the heavily-industrialized sections of the coast. Final boundary selection contained the jurisdiction primarily within the resort-recreational sections of the coast; a factor which adds credence to a "test of presence" as an initial screening device for the interim guidelines.

within the CAFRA boundaries--on the grounds of lack of dependency. In policy terms, this would mean deferring or diverting any proposals for oil refineries, commercial ports, heavy industry and other similar uses as defined in the CAFRA statute--in the absence of compelling justification of state-wide significance.

This initial test of presence would not, of course, screen out expansions or new installations of those heavy industry types which are represented in the Coastal Area, such as chemicals in Ocean County and glass manufacturing in Cumberland County.

Certain major facility types of potentially critical State importance may not currently be present either in the Coastal Area or elsewhere in New Jersey. In this category are support complexes for Outer Continental Shelf Oil and gas exploration and re-gasification plants for liquified natural gas shipped from abroad, facilities which may demonstrate dependency on locations within CAFRA boundaries.

Guidelines II: Land and Water Features of the Coastal Area Classified
as to Suitability for Preservation, Conservation,
and Development

While the presence test separates out major facility types to be deferred from Coastal Area location during the guidelines period, the guidelines should provide a method to evaluate types that are likely candidates for development, in relation to the land and water features of the Area. Some framework of environmental suitability analysis should be established to instruct both applicants and reviewers on appropriate settings for facilities and uses to be considered.

The guidelines must, therefore, be general indicators of environmental suitability, subject to modification based on specific proposals and containing a measure of flexibility. They must not be a detailed land use plan that substitutes for or precludes the ultimate environmental strategy to be prepared by DEP. At the same time the guidelines must serve to streamline and clarify the permit review process. They should expedite environmentally and economically suitable development by simplifying procedures. They should also retard or otherwise discourage incompatible or undesirable projects, again through providing a clear sense of direction to the regulatory authority and applicant alike.

In formulating an approach to a "suitability" test for the guidelines, we examined the coastal land and water management efforts of several other states. The recent California Coastal Plan¹ proposes a detailed environmental strategy and is therefore not an appropriate model² for interim guidelines. Materials prepared for Michigan and Georgia² are primarily concerned with detailed project design (e.g., siting standards for specific types of facilities) and are therefore at too fine a grain to serve as general guide to land and water uses.

The most directly relevant approach has been derived for Florida, North and South Carolina, and Georgia as well. The approach essentially involves a classification of the various land and water forms present in the coastal zone. The classification rests on a perception of vulnerability to man-made development. The various

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1. California Coastal Zone Conservation Commissions, California Coastal Plan, December, 1975.
 2. Roy Mann Associates and Coastal Zone Resources Corporation; "General Guidelines for Use of the Great Lakes Shoreline," prepared for the State of Michigan Department of Natural Resources and the U.S. Army Corps of Engineers, May, 1972.

land and water forms are arrayed according to three basic categories representing their suitability for development: Preservation areas (no development suitable), Conservation areas (carefully controlled development suitable) and Development areas (intensive development suitable).

Following the definitions of each general area category, each land and water form in the category is more precisely described, and a set of "preferred uses" identified for each. The uses are then defined, and mitigating measures for each use type suggested to reduce adverse environmental impacts.

Although relevant to New Jersey, we do not believe the approach can be directly transferrable. One reason is that the features cited do not all necessarily exist within the CAFRA area or at the degree of vulnerability indicated.

A second and more important reason, however, is that neither the Coastal Plains nor the Florida guidelines are directly linked with the permit-issuing responsibilities of a regulatory agency. Their policy recommendations are generalized to all relevant state and local bodies, and their use classifications deal with the spectrum of what is possible--not probable.

Furthermore these guidelines are generalized as to time. They are not geared to a short-term period, within which efforts to prepare overall development and preservation strategy will take place.

In our opinion, these deficiencies can be remedied through using the approach as a base for designing suitability tests directly related to CAFRA. A typology of "preservation," "conservation," and "development" area features can be defined. Certain policies and permit-review postures can be established for any facilities proposed in each of the area categories. Then, as a second level of guidance, those facilities and uses considered most likely during the interim period can be evaluated in terms of where their locations are most acceptable, at what densities (where relevant), and what forms of supporting information or commitments would be required for approval. This analysis can be converted readily to review "postures" on the part of DEP, to be communicated to potential developers in advance of an application.

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1. State of Florida, Department of Natural Resources Coastal Coordinating Council, "Recommendations for Development Activities in Florida's Coastal Zone," April 1973.

Coastal Plains Center for Marine Development Services (North Carolina, South Carolina, Georgia); "Guidelines for the Coastal Zone," July 1973.

A suitability test for CAFRA would array the land and water features of the Coastal Area according to a typology of vulnerability to man-made development. Detailed scientific analysis of vulnerability to development, and of what kinds of development produce the most hazards to the eco-system are in process. Definitive measurements remain to be made. Although judgments on vulnerability must be general ones at this time, the interim nature of the guidelines must be underscored. They are a holding-of-the-line until more comprehensive and feature-specific policies are formulated. On that basis, sufficient understanding of the coastal environment exists to form a foundation for reasonable judgments.

The typology would include the following three elements:

Preservation Areas. Preservation areas would consist of the most sensitive land and water features within CAFRA.

During the interim guidelines period, every effort should be made to prevent or deter development in these areas. Only under conditions where DEP determines that overriding state economic or social values are to be served, might development--such as for energy-related facilities--be allowed, and then under firm constraints. Should facilities seek locations adjoining such land and water forms, moreover, the preservation concept might well demand that some form of open buffer area be required. DEP staff will carefully assess the requirements of buffer zones for critical features during the next steps of strategy preparation.

Conservation Areas. Conservation areas would consist of natural and man-made features which are important to the maintenance of the coastal environment, but not the core features of the Area which mark its distinctive character. Conservation areas would also include sections of the coast which may not be environmentally sensitive but, because their development could contribute to scatteration of the physical pattern, merit restraint during the interim guidelines period.

Development Areas. Development Areas would consist of those sections where growth might be appropriately stimulated during the interim guidelines period.

Applications for facilities permits that come before DEP would be treated distinctively for each of these areas. Proposals for facilities on features classified for Preservation would be discouraged by the Department. Any application would be denied unless the applicant can provide compelling reasons to the contrary. Given the nature of the features to be preserved, the presumption would exist that an applicant's environmental impact statement would be unable to demonstrate sufficient positive benefits or mitigating measures to warrant approval of the facility. An applicant would still be at liberty to file, to challenge DEP's position, and to appeal an adverse ruling.

The sanction would be relaxed only in the case of energy facilities or other projects of demonstrated state-wide importance which, however, would have to meet extremely detailed submission requirements.

Proposals for facilities on features classified as Conservation would be treated in a restricted manner by DEP. This means that the applicant would anticipate careful scrutiny of the information submitted and any mitigating commitments proposed. A full environmental impact statement on the project would be essential and requests for supplementary information would be expected. Given the nature of the areas to be conserved, the applicant should expect significant attention to the section of the EIS which deals with alternatives considered to the proposed plan, and the applicant would need to justify fully why the proposed location, configuration, and density of the project was selected. Although in all applications comments from other governmental bodies would be welcomed, for those located on Conservation features, DEP should especially solicit comment and review by the relevant County Planning Department.

Proposals for facilities on features classified as Development areas would be encouraged by DEP. The EIS will still be a requirement. However, the amount of detail on specific items could be sharply reduced and only minimum attention might be given to preservation of information on alternatives considered. An encouraged application could anticipate sympathetic review by the Department, if the applicant could demonstrate:

- a. That his specific project met any location and density criteria to be established for encouraged facilities (See Guidelines III below);
- b. That the applicant or relevant agencies have taken steps to remedy any serious shortages of public facilities or services which the project might engender.

Exceptions to the encouraged category in Development areas would be energy-related facilities, camp grounds and waste treatment plants which have potentially adverse impacts on settled areas, and high-rise housing. These would be subject to detailed use, location, and/or density guidelines that are discussed below.

In formulating this typology of Preservation, Conservation, and Development, we recognize that it is but one level of the necessary guidelines. It should be utilized in conjunction with Guidelines which will be devised to deal with specific facilities and uses.

The Typology of Land and Water Features

Preservation Areas

Preservation areas would consist of those land and water features that are most vulnerable to man-made development. These are the land and

water forms in the Coastal Area which have exceptional, unique, irreplaceable, or overriding environmental importance to the ecology of the Area itself and to the people of the state. These are areas where emphasis should be on preservation in present condition, at least during the interim guidelines period. Such preservation will serve to:

- reduce adverse environmental effects of development and the public costs to mitigate such effects;
- enhance the production of valuable aqua resources such as finfish and shellfish;
- provide protection against natural disasters;
- enhance the natural character of the area for residents and tourists;
- promote recreational activities such as sport fishing.

The question as to which features merit inclusion in the Preservation category has to a great degree been settled by the legislature. Certain key features were singled out in the preamble of purpose to the CAFRA legislation and were determined to be both characteristic of the Coastal Area and together constituting "an exceptional, unique, irreplaceable, and delicately balanced physical, chemical and biologically acting and interacting natural environment." For purposes of the typology, we aggregate these into the following categories:

A. Coastal Waters and Bays. Under CAFRA jurisdiction, these extend to the three-mile limit in the Atlantic Ocean and to the state line in Delaware Bay and Raritan Bay.

B. Rivers, Streams, and Lakes. These include all other watercourses within the Coastal Area boundaries.

C. Wetlands. These include both coastal and inland wetlands. Coastal wetlands are defined and controlled under the Wetlands Act (N.J.S.A. 13.A-1, et seq) rather than CAFRA. Some inland wetlands (marshlands, swamps and natural bays) are not so controlled but would be covered under CAFRA and in the guidelines. These are defined as low, poorly drained areas characterized by water-tolerant vegetation and predominantly internal drainage.

D. Barrier Beaches and Dunes. These include the beach and fore and back dune portions of all barrier islands between Sandy Hook and Cape May.

E. Shoreline and Beach. These include all shoreline and beach areas exclusive of those on barrier islands, both ocean and bay.

F. Prime Forest Areas (White Cedar Stands). Although much of the inland CAFRA area is covered with forests, the White Cedar Stands have been identified by DEP research (See Sec. Two) as of particularly

significant and unique environmental value. In the course of final strategy preparation, other species or methods for classifying prime vegetation may also be so identified for preservation purposes, but at the present time the White Cedars have been specifically identified for preservation.

G. Natural Areas in Public Control. These are designated wildlife refuges, fish breeding areas and associated lands that have been brought under public ownership and are maintained in a wilderness state, not for active public recreation. They include the national wildlife refuges (e.g., Brigantine, Killcahook) and the several State fish and wildlife management areas in the Coastal Area.

Conservation Areas.

The Conservation category would include a number of different types of land and water features which merit some measure of protection. The most important of these are natural features that cannot presently be classified among the unique characteristics of the Area's eco-system but are nonetheless capable of:

- being significantly and adversely altered by man-made development located on them;
- providing hazards to the stability or safety of man-made development located on them;
- acting as buffer or transition areas to adjoining critical features, thus providing these features with additional measures of protection.

We would identify features for conservation as follows:

A. Barrier Islands. These would include all portions of all the barrier islands (including Sandy Hook) that are both undeveloped or in housing and recreational use, other than the dunes, beaches, and wetlands. Although the beaches, bays, and other prime features of the coastline are the attractions, it is on the barrier islands that much of the housing and other facilities related to the recreation activity have been built. The remaining amount of vacant land is extremely limited. The developable portions of the islands, along with existing developed areas, are subject to flooding. These are reasons to scrutinize carefully the design and impacts of any facility application.

B. Flood-Prone Land. This includes all land subject to 100-year floods not otherwise classified for preservation status (e.g., as wetlands, barrier beach or island). This land has water storage capability in times of heavy storms. More important, construction on such land is subject to hazards. State legislation has been adopted to regulate development on such land (the Flood Control Law of 1972), with certain responsibilities given to DEP and local communities. The U.S. Department of Housing and Urban Development has adopted

regulations which all communities subject to flooding must meet--most particularly the requirement that the ground floor of new construction be above the 100-year flood line. A Conservation category for flood areas would guarantee careful attention to these regulations. At present, 100-year flood land is defined by HUD and by the U.S. Geological Survey (the basis for the flood-prone land identified on Maps 2-5 and 2a-5c). More definitive mapping is underway by DEP.

C. Prime Agricultural Land. The 1973 Report of the Blueprint Commission on the Future of New Jersey Agriculture urged preservation of prime farmlands in the state. In respect to the Coastal Area, these would consist of Class I and Class II soils. The Class I and Class II soils are deep, nearly level, well-drained sandy loams and fine sandy, gravelly sandy and sandy loams. We believe it more appropriate to designate such lands in the conservation category for three reasons:

1. Much of the vacant Class I and Class II land so designated has already been taken out of farming and is overgrown with vegetation.
2. The same reasons that make the Class I and Class II soils desirable for agriculture make them--from a soil-bearing standpoint--particularly appropriate for residential and other forms of development.
3. From a use preservation standpoint, prime agricultural land poses certain hazards to protection of the eco-system since the runoff from pesticides and animal droppings contributes to water pollution, a serious problem in the coastal eco-system.

D. Slopes Over 15 Percent. The areas of steep slopes are limited to portions of Monmouth County. Construction on such sites can be safely undertaken, but the slopes themselves present such hazards to development that any project should be carefully reviewed from the standpoint of safety. Equally important, however, is the rarity of this land type in the Coastal Area and its strategic location. Much of existing development here has defaced the land form and provided severe visual intrusions in the natural landscape. Development could be allowed, but only upon careful review.

It is entirely possible that other natural features which present hazards to construction or to which construction presents hazards may be defined during preparation of the environmental strategy.

A second type in the Conservation category would be those features involving existing man-made facilities which have special value to maintenance of the existing character of the Coastal Area. These would include:

E. Historic Sites or Districts. These would be both natural and built areas of special historic and archaeological importance,

including remnants of early settlements, and districts of architectural significance such as Cape May City, Greenwich, Mauricetown, and Ocean Grove. To be designated as "historic" a site would either be listed on or eligible for listing on the National or New Jersey Historic Register. The concern here would be with how any new development is designated, as well as environmental impact, and the compatibility of such development with the existing historic features.

F. Public Open Space Designated for Active Use. These would include all state (Island Beach), federal (Sandy Hook), and local park lands and camp grounds where active recreation is encouraged and support facilities may presently exist. In the event of further development of these areas, review must be conducted to ensure compatibility with the natural features which make them of recreational value.

A third element in the Conservation category would be all remaining land areas not designated for Conservation, Preservation, or Development.

G. Land Areas Not Otherwise Designated for Development, Conservation, or Preservation. These would include lands which may or may not be environmentally sensitive but whose development during the interim guidelines period could contribute to scatteration, leapfrogging, or the un-economic extension of public services. Again, development would not be prevented in these areas, but the full application and EIS procedure followed by careful DEP review would be required. This category would probably include much of the forested and non-prime agricultural sections of the CAFRA Area that are still some distance from existing settled districts.

Development Areas

The basic rationale for designating areas where development may be encouraged during the short-term interim guidelines period is as follows:

- those areas where residential, commercial, industrial, and other man-made development has taken place and which are already the locus of most public and community services should be the primary targets for new short-term growth.
- in keeping with the objectives of achieving concentrated, efficient growth patterns in the Area and maximizing utility of existing public services, in the short-run, growth should be encouraged as extension and infill of already developed areas. The final environmental strategy may establish criteria under which individual facilities (particularly residential, commercial, and industrial) could be encouraged in a different manner. Subsequent governmental action may also establish publicly-owned and controlled open space which provides buffers to or divisions among development areas. In the short run, however, the principal of continuity makes the most sense as a means of achieving the state's objectives.

Definitions of the areas to be included are as follows:

A. Residential and Allied. These would include existing urban and suburban areas, primarily residential in character and utilized for year-round, retirement, and seasonal residence. These would be the most appropriate locations for new residential and support facilities in the short-run. Excluded from these are barrier island resort communities (except those which meet the criteria in C below), and bay-side communities located on flood-prone land which are in the conservation category.

B. Urban, Economic Centers. These would include existing concentrations of commercial, office, industrial and other facilities (sometimes with mixed residential uses), e.g., such concentrations as in Millville, Toms River, and Long Branch. The barrier island and bayside exclusions also apply. They will be the most appropriate locations for employment generating activity.

C. Urban, Economically or Physically Depressed. The redevelopment of such areas, and the attraction of new housing and economic activity would be of major significance under DEP's CAFRA objectives. Both redevelopment and large-scale rehabilitation would be encouraged, in conjunction with efforts to mitigate adverse environmental impacts and improve the community's natural environment.

Designation would be made on a municipal basis. Communities such as Atlantic City, Asbury Park, and Long Branch clearly have the serious physical and social problems to merit designation.

Detailed criteria for selection in respect to the long-term management strategy can be based on such factors as extent of unemployment, extent of physical deterioration, qualification for state Urban Aid assistance, etc. Such criteria can be formulated in conjunction with the Department of Community Affairs and the Department of Labor and Industry.

D. Urban Infill/Extensions. This includes land presently undeveloped or lightly developed which adjoins existing concentrations of residence, commerce, or industry. It also includes land that would represent immediate extensions of existing free-standing development or subdivisions where building and occupancy has already occurred. (The land so designated should not, however, consist of features in a Preservation or Conservation category). A certain amount of reviewer discretion may be used in determining what constitutes a free-standing development or subdivision. We suggest, however, that a "performance" measure be employed as a threshold rather than a numerical number of contiguous units. The existing developed area should be of sufficient size, with sufficient complements of installed services (sewer, water, electricity, roads) that extensions of these can readily be made to service additional incremental growth. Clearly, scattered rural dwellings do not apply, or subdivisions on septic tanks and wells, or those with such insufficient utilities capacity that extensive connections are required from proposed new development through undeveloped areas to reach interceptor sewers, water mains, arterial streets, etc.

The question will arise about the definition of "extension." Do we mean the next lot or subdivision, or some "reasonable" distance that takes into account the possibility of public land or sensitive natural features that make contiguous development undesirable or impossible? Clearly a test of reasonableness should be applied in formulating a definition. We believe, therefore, that the following definition can be established. Land which represents "extension" can be immediately adjacent to an existing built-up area or within 1,000 feet in any direction so long as it has access to a designated state or county road or local street. The 1,000 feet represents readily traversed walking distance and a presumption that intervening property not precluded from development would go into some form of developed use in the near-term future.

The 1,000 foot constraint points up the interim character of the guidelines. It is suggested as a containment measure until an overall management strategy can afford more sensitive approaches to location based on land and utilities capacity and open space requirements.

E. Other Lands in Public Ownership and Use. These would include uses not otherwise classified such as military bases, airports, landfills and other public facilities locations. Any additional facilities or uses would be examined for compatibility with those already occupying the property.

In reviewing the above basis for formulating area-wide guidelines, it is important to recognize that some applications--particularly for very large-scale projects--might cover features in more than one category. For example, a residential development might adjoin an existing settled area and contain some non-sensitive land and some marshland. In such cases, DEP staff would make a composite evaluation of the proposal, identifying sensitive issues and suggesting matters to be emphasized in the applicant's environmental assessment.

Guidelines III: Policies and Requirements for Specific Facilities
of Short-Term Development Potential in the Coastal
Area, Excepting Those Related to Energy Production

A system of area-wide guidelines dealing with land and water features of the Coastal Area establishes a basic framework for planning and permit review during the short-term future. It must be supplemented, however, by guidelines specifically directed to those facilities and uses that are the most likely candidates for location within CAFRA boundaries. For certain uses present policy problems that must be addressed in order to provide sufficient direction for potential applicants and DEP reviewers alike. This section addresses the basis for preparing facilities guidelines.

A. Housing

The housing guidelines should reflect DEP objectives for environmental conservation through compact and efficient patterns of residential development. These objectives include minimizing public service costs of new settlement; conservation of energy and broadening of the housing supply. In policy terms, the guidelines should strive towards modifying some of the past trends indicated in the analytic and descriptive sections of this study. The guidelines must be concerned, therefore with both the location and the density of new development. Given the issues raised by high-rise construction in the shore districts, guidelines must also establish some basic performance standards for high-rise construction that would avoid the adverse environmental impacts of the past.

As DEP expresses a concern for housing location and density through the guidelines, conflicts with municipal zoning may be raised. Perhaps the best expression of DEP policy on this matter was made by Commissioner David S. Bardin in a January 13, 1976 address to the Advisory Committee of the Texas Coastal Zone Management Program where he stated:

"The state's coastal land use laws--CAFRA, Wetlands, and Riparian--supplement the local system of land use control in New Jersey. The entire state is incorporated, into twenty-one counties and 567 municipalities. The state has delegated comprehensive planning and zoning responsibilities to the municipal level of government. County governments enjoy but weak planning responsibilities: approval of major subdivisions and projects which affect county road and drainage systems. These state coastal land use laws, particularly CAFRA, supplement the locally-oriented system of land use regulation. Specifically, under CAFRA the state may override a project that received approval at the local level, but the corollary is not true. The state is not authorized by law to override a local denial of a project.

New Jersey has a strong tradition of home rule, but the Wetlands and CAFRA statutes, together with the state's flood plains law, represent the first steps in recognition that some land use decisions require a greater than local perspective due to the cumulative effects of incremental decisions and the statewide importance of specific land and water forms. Consequently, we remain sensitive to the traditions of local government in New Jersey and work closely with county and municipal government in our coastal decision making. We find active involvement of the middle tier, the county, to be particularly helpful. Despite the potential for local-state friction, we begin to detect some appreciation for this state level system of land use regulation, as the state helps specific communities achieve local objectives that were unattainable under the authority granted to the local level."

Thus the housing guidelines serve not only as direction to potential applicants and reviewers but as a firm statement of policy to local communities and counties who may be in a position to alter their regulatory structure towards more economically and environmentally sound approaches.

1. A Location Test. In our opinion, housing developments should be encouraged which meet the following criteria in respect to their location. Basically these criteria reiterate those developed in the area-wide typology developed above. They are reformulated, here, however, with some modification to underscore the importance of housing as the primary land demand during the guidelines period.

a. Extensions or Infill of Existing Settled Areas. These housing developments would represent incremental additions to land already settled. They would represent extension or consolidation of such areas to produce more efficient and environmentally sound utilization of existing and programmed services and facilities. They would represent utilization of vacant land within an existing urbanized community, extensions of that community, or expansion of projects which have already been established while leap-frogging settled areas. The sites would immediately adjoin existing settlements or, as defined in the Development category above, be within 1,000 feet of such land.

b. Redevelopment of Existing Urbanized Areas. Such projects would represent means of utilizing more efficiently an existing settlement pattern, with its already-established complement of utilities and services. They could also represent new and needed investment in depressed communities or housing to meet unfilled social needs; e.g., housing for the elderly.

c. Location in Close Proximity to Existing Commercial and Community Services and to Places of Employment. This would be a restatement of a. and b. above, with an emphasis on the energy-conserving aspects of the location: e.g., one which helps reduce automobile travel time and fuel consumption, and which contributes to the overall feasibility of public transportation.

d. A Comprehensively Planned New Community or Large-Scale Development in a Presently Undeveloped Area. This is the one form of residential facility type that might be a candidate for encouraged status in an area otherwise in a Conservation category. It is somewhat unlikely to occur during the interim guidelines period because of the long lead time and very high financial capability required. However, DEP should be on record as favoring such an undertaking.

These planned communities would be self-contained to the greatest degree feasible, and should carry with them applicants' commitments to provide or to finance necessary public and community facilities. They would include provisions for school sites, convenience commercial centers, health services, water supply systems, sewage collection and treatment, solid waste collection, recreation, and community meeting areas.

In considering such large-scale planned developments for the Area, extensions of existing municipal water or sewage transmission lines over large tracts of undeveloped land to the project should be prevented. They would serve to open up pressure for urban growth on new land which might not receive such comprehensive treatment as the planned community.

All other housing proposals would fall under the restricted or discouraged designation depending on whether they are located in Conservation or Preservation areas.

2. A Density Test. Some form of procedure to screen appropriate densities and the design of these densities should be established as part of the guidelines. In keeping with DEP's objectives, therefore, housing developments should be encouraged that demonstrate density levels and (through the individual applications) site planning which can contribute to:

- minimizing the total amount of land absorbed by urban development
- minimizing the cost burden on local, state and federal government by establishing economical and efficient patterns of utility services, including special attention to energy conservation
- providing a high degree of public or common environmental amenities on the site
- broadening the options available in the area housing supply, especially in respect to rental or purchases by low to moderate income residents.

In our opinion, the following forms of residential projects can best meet these criteria, and should be encouraged.

a. Cluster developments. Cluster can be defined as single or multi-family housing concentrated on environmentally suitable segments of a site, with (in the case of single family) actual lot sizes smaller than those of conventional subdivisions at comparable density. Remaining undeveloped land is devoted to common open space or recreation area.

Clustering can be applied even to the lowest density housing constructed within the Coastal Area (e.g. fewer than one unit per acre) to achieve more efficient land use than conventional lot-by-lot construction.

b. Moderate density development. "Moderate density" would range from a low of 5 to a high of 10 units per gross residential acre. In resort areas, where sites are scarce but ocean and beach amenities considerable and year round service needs modest, the range could be expanded to 20 units per acre. Within this range it is technically feasible to design land-conserving single family units, town houses, and garden and mid-rise apartments; in short a variety of housing types which could serve a wide variety of income levels and life styles.

c. Mixed density and use development. These would be large-scale new communities, planned unit or planned residential developments which incorporate a variety of housing types and densities along with neighborhood convenience shopping areas and community facilities and services.

3. Cause for Conditions. Housing projects submitted for CAFRA permits should be able to meet both the location and the density tests to be encouraged; e.g. to merit flexible information submissions and to receive priority processing. All other proposals (except those suggested for Preservation areas where they would be discouraged) should be given restricted status. This would mean, for example, that a very low density, conventional subdivision adjoining an existing subdivision would still require full EIS submission. If such restricted housing is approved, after full environmental impact assessment and detailed exploration of site location and density alternatives, the Department should establish rigorous conditions to mitigate adverse impacts on public services. These would include requiring the developer to make contributions to community capital facilities and to open area and recreation space provision.

4. High-Rise Housing. High-rise housing requires special guideline treatment. The opportunities it affords for land and energy conservation and the convenience for individuals and small families are frequently counterbalanced by visual intrusion on beaches and existing settled areas; along with traffic congestion. Rather than prohibit or discourage tall buildings as a land use, it is more appropriate to establish some basic performance guides for its placement.

We will define high-rise housing as a structure containing apartments for rental or sale that is six stories or greater in height or 60 feet or more from grade. The densities of such projects would normally exceed 20 units per acre, although some with large surrounding site areas could fall below that figure.

We suggest that high-rise housing be encouraged in the Coastal Area when such structures are planned as integral components of a larger scale mixed density planned unit development, planned residential development, or a new community. At such a scale, a developer can, with the design, control the impact zone of the structure and mitigate adverse visual impacts by placement of facilities with transitional heights and densities. This guideline would apply both to the resort and inland sections. High-rise housing could also be encouraged in developed settings where transitional heights and densities have already been established.

High-rise housing when proposed for the barrier islands or other ocean-front resort communities should be strongly discouraged under the following circumstances:

- when the longest dimension of any such structure is oriented parallel with the beach.
- when the structure blocks entirely the views of dunes, beach, or ocean or bay that are currently enjoyed from existing residential structures.
- when designed for a height greater than the servicing capacity available in the relevant local fire company. This would be important from a safety standpoint.

In all other locations and at all other configurations a high-rise proposal should have restricted status, guaranteeing that certain essential design studies be undertaken to consider the visual impact question. The Department should be in a position to provide careful scrutiny of information depicting the impact of shadows from the building, of the structure's bulk, and of traffic generation characteristics. In addition to design and traffic studies to provide this information, the applicant should be required to furnish the following:

A scale model, in at least rough block form, which will be a true representation of the project site, the physical form of the proposed building or buildings, and all land and water forms and existing structures within 500 feet on all sides of the project site. In this manner, the developer would be forced to take impacts into consideration in design, and the review team would be able to make a reasonable assessment. Relatively inexpensive models can be readily fabricated out of simple materials.

In only one kind of situation could information requirements be relaxed: Publicly-assisted housing exclusively for the elderly. High-rise configurations are particularly advantageous for the elderly because of elevator circulation and relatively low site costs per unit. Traffic generation and parking demands are generally less than family or resort housing. Although the block model and shadow analyses should be provided, under any circumstances, a flexible treatment could be given to aspects of the EIS.

5. Hotels and Motels. High-rise hotels should be governed by the same policy as extends to high-rise housing. Since it is unlikely that hotels will be proposed as part of larger multi-use complexes, those guidelines (including block model and design study preparation) which apply to individual high-rise housing would pertain here as well.

Motels and other hotel proposals will normally be below six stories in height. For those located in the beach resorts, the restricted classification would in most cases apply due to inclusion of these areas in the Conservation category. Those located elsewhere should be encouraged in urban economic centers or as extensions of these centers within 1000 feet, with access on a state or county road or local street.

6. Camp Grounds. Camp grounds are best not located in developed areas because of the kind of "rural" vacation atmosphere they are intended to engender. This would apply to both tenting areas and those for recreational vehicles. Camping facilities can, however, be an appropriate use (at least on an interim basis) for agricultural or forest land. They fill a need, and they can serve to keep such lands from more intensive development with permanent construction.

Camp grounds can produce adverse environmental impacts, as has been recognized by a December, 1975 CAFRA denial of a facility in Cape May County which would have produced pollutants in the water supply. For the most part, camp ground applications will probably be made for Conservation areas. They should be encouraged on non-prime agricultural and forest land, restricted on other Conservation features and in Development areas, and discouraged from location in Preservation areas.

7. Marinas. Marinas have to be located on shoreline and water features which are classified as Preservation and are therefore discouraged from development. Nevertheless marinas are basically both popular and compatible uses in the recreation sections of the Coast. They can be appropriately designed. Therefore, the Department should treat individual marina applications on a case by case basis, scrutinizing each for its attention to environmental quality, with no relaxation of information requirements.

8. Facilities with Beach Access. As indicated in Section Two, Departmental policy requires that all developments (housing, recreational, commercial, etc.) located adjacent to beaches provide some means of public access to the beach. This policy has been legally upheld in Stanley Van Ness v. Borough of Deal (Docket No. C1850-74, Chancery Div., Monmouth County, 1975) which requires that "where there is a municipal beach and facilities provided in conjunction therewith which have both been dedicated to the general public's use, then such beach, ocean and facilities must be open to all on equal terms." It should be clear that all proposed projects which comply with the interim guidelines will also be required to provide such public access.

B. Employment-generating Uses

These would include light industry and industrial parks, offices, commercial activities such as shopping centers, along with mineral

extraction activity (e.g. sand and gravel). Some of these uses are specifically referred to in the CAFRA statute. Others such as those with parking facilities of 250 spaces or more would be included by the definition of facilities in the Department's proposed CAFRA rules and regulations.

In our opinion, density is not a matter of consideration in respect to these facilities, and local zoning regulations should be sufficient guides in this respect. The only exception would be for high-rise office structures which should be governed by precisely the same guidelines as high-rise housing.

Mineral extraction represents a resource exploitation use that should be handled separately and is considered below.

The principal concern with employment-generating uses would be their location. In that regard, basically the same considerations that affect housing should apply; namely the achievement of compact, efficient, development patterns and the opportunities for revitalizing depressed communities. Special concerns would apply to shopping complexes, especially regional shopping complexes. It will be important for such shopping facilities to provide convenient service to established and newly-growing residential areas. At the same time, the Department should not contribute to the decline of older business areas by approving shopping facilities that would draw business away from such areas.

Therefore, we suggest the following as the substance for guidelines:

1. In respect to light industry, industrial parks, office and commercial facilities:
 - a. Such facilities would be encouraged within the boundaries of economically depressed or physically deteriorated communities as defined above.
 - b. Such facilities would be encouraged within existing urban economic centers or as infill/ extension of this development. Extension would be defined as adjacent to existing facilities or within 1000 feet of such facilities with access to a state or county road or local street.
 - c. All other locations would be restricted or discouraged depending on the land and water features incorporated in the site.
2. In specific respect to regional shopping centers, a market analysis should be furnished as part of the submission. This analysis would identify the prospective market area and proceed to identify what impacts might be anticipated on the economic well-being of existing commercial facilities within or serving all or portions of that market area. Staff from the Department of Labor and Industry could in these instances, particularly, assist DEP in the permit review.

The above suggestions would not apply to mineral extraction activities or to facilities associated with energy production or exploration.

Mineral extraction is a special case. Its location is entirely dependent on the location of the resource itself. It is not "flexible"

or responsive to policy direction in siting. Given the presence of a glass industry within CAFRA boundaries and the continuing need for construction materials, we anticipate that applications for mineral extraction permits will perhaps be submitted during the interim guideline period. All applications on preservation features should be discouraged. All others should be restricted, with evaluation based on the Environmental Impact Statement. The EIS should give special attention to how the property may be ultimately restored.

C. Public Support Infrastructure

1. Transportation. DEP has direct permit review over all road proposals within the CAFRA boundaries and any new airport and port facilities. We do not anticipate applications for new airports and ports, except in relation to OCS facilities (treated below). Clearly, however, the Department is interested in all forms of transportation affecting the coastal area, and its basic policies should be geared to influence the appropriate establishment of bus, railroad, and other forms of public transit.

Transportation guidelines should, therefore, contain an expression of policy that the Department encourages the establishment of bus, rail, and other forms of public mass transportation.

In specific respect to roads, the same locational policies should apply as to housing: encouragement of compact, efficient patterns of settlement, with adequate public services. Roads (state, county, local, and interstate) can provide needed service to alleviate present shortages or inadequacies. At the same time they have the potential to generate significant secondary growth impacts, especially if located in presently undeveloped areas.

In our opinion, roads should be encouraged during the interim guidelines period only when they provide demonstrably-needed service to existing settled areas or to extensions or infill of existing settled areas.

All other road projects would fall into the restricted classification, except when located on preservation features.

Under any circumstances, however, guidelines should include the requirement that all public agencies submitting proposals for limited access roads or roads to service undeveloped areas present, as part of the submission, secondary impact analyses. These analyses would identify the extent of undeveloped as well as developed land in the service area of the proposed facility. They would identify the likely character and timing of any potential urban development of such lands. The alternative approaches to location and capacity considered and the reasons for selecting the preferred locations should be identified.

2. Disposal of Liquid and Solid Waste.

a. Transmission lines. Sewer lines will probably be proposed for CAFRA review during the next few years. Precisely the same concerns apply to sewer systems as to roads. They can contribute to compact, efficient settlement patterns and they can serve to open up new areas

for development. In our opinion the guidelines should also be the same: Projects should be encouraged that relieve capacity shortages in existing settled areas, or correct deficiencies. Projects should be encouraged that provide service to extensions or infill of existing settled areas. All other projects would be in the appropriate restricted or discouraged category dependent on the route selection.

Sewer applications for service to undeveloped areas should be accompanied by secondary impact studies which delineate the extent and timing of their probable impacts on development.

It is important to note that the Department has adopted and distributed a document dealing with "Environmental Guidelines for Planning, Redesigning, and Constructing Interceptor Sewers." Reference should be made to the applicability of that document in the CAFRA guidelines. Guidelines for secondary impact assessment may be found in DCA's publication "Secondary Impacts of Regional Sewer Systems," 1975.

b. Treatment of Liquid Waste. Waste treatment facilities for both sewage and solid waste must be considered. The former can consist of secondary and tertiary treatment plants to meet national EPA standards or "land disposal" operations in which partially or wholly treated effluent is discharged onto farmland for natural fertilization and recycling. All of these will have some impacts on the water of the coastal area, through discharges into streams, ocean, or the ground.

These are all most appropriately located at a distance from settled areas, with buffers for safety purposes, expansion, and visual screening. In our opinion, however, the location and environmental consequences of any facility of this kind must be judged totally on its own merits. Except for the suggestion that selected sites be distant from population centers and be adequate for expansion and buffering, we believe the guidelines should stress that full environmental assessments and scrutiny would be required in each case. Thus, liquid waste treatment facilities would be restricted in conservation areas and discouraged elsewhere.

c. Disposal and Treatment of Solid Waste. Solid waste facilities may include landfills, incineration, or various forms of separation and recycling operations. These also are appropriately located at a distance from settled areas, with buffers for safety purposes, expansion, and visual screening. They should be discouraged from Preservation and Development areas and restricted in Conservation areas. Transfer stations, used as collection points, could if properly designed be located in settled areas and should carry a restricted classification there. Detailed review of each solid waste facility should be made on the merits of the application and impact statement. Adequacy of buffers and access control should be demonstrated, along with mitigation of any adverse air or water quality impacts.

3. Other Public and Quasi-Public Facilities. These would include those schools, libraries, health centers and hospitals, maintenance yards, and other facilities subject to CAFRA regulations.

Again, the principal objective to be served is that of fostering compact, efficient, adequately served urban areas. Such facilities would be encouraged in existing residential and commercial areas and as infill and extensions. They would be restricted or discouraged in other locations. The individual EIS would need to demonstrate the service area of the facility in question and the nature of any adverse impacts (and mitigation measures) in immediately adjoining areas.

Issues and Information Relating to Guidelines for Energy Facilities

The type, number, location and scale of energy-related facilities which may seek locations in the Coastal Area are matters of significant concern for the environmental condition and well-being of the state. Issues surrounding these facilities extend beyond the Coastal Area and the State as a whole. They are national in scope and affect the entire society. Some of the questions raised by energy facility proposals may be resolved through evaluation by DEP of the submissions in response to the Call for Information in December, 1975. Other questions may be impossible to answer until more detailed knowledge is available about specific undertakings; such as the true extent of oil and gas deposits on the Outer Continental Shelf.

As Section Four has indicated, numerous kinds of facilities are under some form of consideration: additional nuclear power plants and fossil fuel power plants; support complexes for OCS oil and gas exploration; pipelines to carry any OCS finds to refineries and processing plants in the Newark and Camden areas or elsewhere; liquified natural gas storage and processing facilities, etc. Each facility raises specific land use and/or density matters for state consideration prior to any definitive siting decision. For example:

What is the appropriate safety zone around nuclear plants, and what kinds of land uses and densities should be allowed? (A matter currently being addressed by a special DEP task force).

What are the cumulative impacts of more than one nuclear facility in close proximity to each other?

Can OCS staging facilities be concentrated in a single location?

Despite the environmental hazards to the Coastal Area, is it economically and environmentally preferable to locate OCS-related pipelines with Coastal Area crossings? How can potentially adverse impacts be mitigated?

Given these and numerous other questions about environmental impact and population safety for which hard answers are not yet available, firm

guidelines to siting cannot be established at the present time. Much of the analysis necessary to establish a basis for guidelines is currently in process. More definitive studies of OCS impact are required. Considerable dialogue is being undertaken, moreover, between the Department, the private companies and utilities involved, other levels of government, and interested citizen groups to explore the options available--hopefully, within a climate of mutual understanding.

Preparation of detailed siting and land use guidelines for energy facilities should become an immediate priority as the Department formulates alternative management strategies for the Coastal Area.

Events, in terms of specific facility applications, will not wait, however, while this activity is underway. Therefore, we suggest the establishment by DEP of detailed information requirements, at least on an interim basis, as part of submissions for energy facilities. Any application for such facilities should be able to demonstrate, incontrovertibly, its dependence on a Coastal Area location and provide extensive information on safety considerations, anticipated performance, and impacts. The burden should be on the applicant, while the state standards are being formulated.

Unlike housing and most other facilities regulated under CAFRA, energy facilities are subject to a variety of federal controls, licenses, and permits. Federal agencies customarily make in-depth analyses of the potential environmental impacts and of measures to alleviate them. The Department should not duplicate the work of these federal agencies, but should build on the base of information required under the National Environmental Policy Act. DEP should require submission of information vital to the environmental, economic, and social conditions of the Coastal Area that is not normally emphasized in the context of federal review.

The suggested guidelines for submission of information are as follows:

1. Environmental Impact Statements prepared for federal licenses and permits should be accepted as a major part of the required CAFRA EIS. This is in keeping with the Department's role as a reviewing body under the NEPA legislation. As a general principle the Department should stress provision of cumulative assessments where relevant: for example, in respect to the potential environmental and economic impacts of several nuclear facilities on Artificial Island and of both off-shore nuclear facilities and Outer Continental Shelf staging areas and pipelines in the Atlantic City area.

2. The CAFRA permit application should require a supplement to provide the following additional information if not detailed within the federal EIS.

- a. Evidence of the facility's dependence on a location within the Coastal Area. This would include evidence that no sites outside the Coastal Area are economically feasible or afford lesser environmental impacts.

b. Evidence that the facility location and use conform to state land use and environmental plans and policies.

c. A discussion of the character, degree, and timing of any urban development likely to be induced by the facility in the Coastal Area.

d. A discussion of specific impacts likely to be induced during the construction phase of the facility on:

- housing and community services generated by construction worker and employee demand

- existing business and land uses in the Coastal Area

- local streets and utilities

- local government public services, taxes, and fiscal stability

e. A discussion of long-range (10-20 year) post-construction impacts on local area housing, public services, and government finance.

f. A description of a measurement and monitoring system to be introduced by which both environmental and economic impacts may be periodically checked.

g. A discussion of techniques, governmental responsibilities, and financial measures that may be taken to mitigate negative impacts, both environmental and economic, revealed in the analytic document.

h. A discussion of measures that could be taken to decommission, dismantle, or remove the facility if at a future date it is no longer needed.

Applying the Guidelines at a Sub-Area Scale

The guidelines will be most useful in directing and evaluating individual permit applications throughout the Coastal Area. They will also serve to guide basic Departmental policy in the Area and in each of the Sub-Areas. Examples of the kinds of policy guidance to be afforded at the Sub-Area scale appear below. They address certain issues currently facing each of the Sub-Areas and discussed earlier in this report. Below are policy postures which DEP can adapt to these issues, in keeping with the guidelines. Again, these are examples only and do not represent the full range of issues.

The North Shore (Monmouth and Middlesex Counties)

- Encourage:
- residential infill in existing developed areas, particularly at moderate densities;
 - redevelopment for employment-producing activities and housing (especially low to moderate income) in economically and physically depressed communities such as Asbury Park and Keansburg;
 - expansion for similar uses of existing light industrial concentrations.
- Restrict:
- high density, high-rise housing in shore areas;
- Discourage:
- further high-rise housing on the steep slopes and ridge areas of Atlantic Highlands;
 - heavy industry;
 - OCS staging areas;
 - onshore nuclear plants.

The Central Shore (Ocean County)

- Encourage:
- residential infill and extension in the northern portion of the county, particularly at moderate densities (e.g., in and around urbanized portions of Brick, Dover, Lakewood and Manchester townships);
 - provision of public facilities and services to support existing and short-term residential development in the northern portions of the county;
- Restrict:
- individual subdivisions without supporting services in the central and southern portions of the county;
 - provision of public facilities and services which serve to open up presently undeveloped areas in the central and southern portions of the county;

--scattered subdivisions in the northern portions of the county;

--nuclear power plants.

Discourage: --further high-rise housing on barrier islands

--heavy industry

--further regional shopping centers.

The Southern Shore (Burlington, Atlantic and Cape May Counties)

Encourage: --employment-generating development and housing in Atlantic City;

--residential infill and extension of existing developed areas, particularly at moderate densities;

Restrict: --isolated low-density subdivisions without supporting services;

--industrial development outside of Atlantic City;

--nuclear power plants;

Discourage: --development in Cape May incompatible with its historic character.

The Delaware Bay (Salem and Cumberland Counties)

Encourage: --residential extensions of Bridgeton and Millville in contrast to opening up new areas for settlement;

--processing activities related to the area's agricultural and mineral resources;

Restrict: --nuclear power plants and LNG conversion facilities;

Discourage: --development in Greenwich and Mauricetown incompatible with their historic character.

Disseminating the Guidelines--Role of the Pre-Application Conference

As a set of policies the guidelines will be disseminated in various forms throughout the CAFRA Area and the State: e.g. through copies of the guidelines themselves and this basis and background study, seminars, meetings, news articles, etc. They will be discussed, debated, and reviewed by a large number of groups and individuals representing a spectrum of interests, and this very process of review and comment will aid DEP in formulating its mandated long-term strategy for the Coastal Area.

In the short-run, however, the guidelines will have their most important use as a tool in the CAFRA permit review. They are meant to expedite acceptable or desirable growth, and deter proposals that would be undesirable on environmental or economic grounds. Here, we believe, is where DEP's innovative pre-application CAFRA conference will come into its own. The pre-application conference can occur at any stage of project design (i.e. before or after municipal zoning reviews) prior to the CAFRA submission. There, it is intended that the review staff discuss frankly with the prospective applicant all aspects of his proposal--site location, possible environmental difficulties, development program and timing, project design. This occasion for a frank exchange of views is ideally suited for DEP staff to identify for the applicant whether his project would have the status of "encouraged," "restricted," or "discouraged."

The guidelines will themselves be framed with sufficient clarity that a developer can assess in advance of a meeting the probable status of the undertaking. The conference, however, (and any following exchange of views) can directly deal with the status of the application and the necessary information which the EIS should contain.

Thus, in scheduling a pre-application conference, the project developer should assemble information relating to the kind of land and water area features his project will cover, its specific location and (in regard to housing) its probable density. Based on this material the DEP staff can make a reasoned judgment of how basic or detailed his EIS and design analysis need be, saving considerable time and effort over a completely ad hoc procedure.

In the event that a developer does not elect to schedule a pre-application conference, and submits instead complete plans and EIS information for his permit, the guidelines should provide DEP permit review staff with the criteria for evaluating the adequacy of its site location and density.

SECTION SIX: Explanation of Guidelines Map MaterialsSynopsis

This section discusses the map materials prepared for the Guidelines study; their data, sources, and uses.

Two sets of detailed maps have been prepared for the Guidelines analysis. Those at a Sub-Area level (maps 2-5) display developed area; public open space; and a composite of selected environmentally sensitive areas--wetlands, flood prone areas, Class I and II soils, White Cedar Stands and Slopes over 15 percent. Twelve supplementary section maps show details of the Sub-Areas and follow (maps 2a -5c). On the section maps, the selected environmentally sensitive features are individually shown. The maps represent data obtained from a variety of sources. Due to the variation in original scale and dates of compilation of the source materials, the maps must be considered as indicative only generally of the locations of the features they display.

I. Data and Sources: The data depicted and their respective sources are as follows:

Developed Areas: United States Geological Survey Photomosaics, USGS (CARETS) (from Aerial Photographs acquired by NASA, 1973)

The photomosaics have 5 minute geographic projection ticks and a 1000 meter grid and are at the scale of 1:100,000. They document land use for the CAFRA Area south of Monmouth County. Although not validated by field survey, these generalized data are considered sufficiently accurate for inclusion in the Guidelines maps. Developed areas include residential, commercial, and industrial land use categories.

Information on developed areas in Monmouth County comes from the map entitled, "Development Suitability," prepared in 1974 by the Monmouth County Planning Board. Scale of the published map is 1 inch to 4000 feet. Data has been transposed onto Guidelines maps at scale of 1:100,000.

Wetlands: Sources for Monmouth County and remainder of the CAFRA Area are identical to those cited above for Developed Areas. DEP is in the process of validating this material.

Flood-Prone Areas: Data on flood-prone areas come from the United States Geological Survey 1973 at the scale of 1:24,000, photographically reduced to 1:100,000, and supplemented by materials prepared for the U.S. Department of Housing and Urban Development.

Validation of these data by DEP is pending.

NOTE: Wetlands are considered to be flood-prone, so for purposes of clarity, only those flood-prone areas that are not also wetlands are delineated as such on these maps.

Class I and II Soils: Maps of prime open agricultural lands at scale of 1:250,000, Report of the Blueprint Commission on the Future of New Jersey Agriculture, Phillip Alampi et al, Trenton, N.J., New Jersey Department of Agriculture, April 1973.

Prime farmlands of less than 1 square mile are not mapped.

Class I soils as classified by the Soil Conservation Service have few limitations restricting their use. These include deep, nearly level well-drained loams in the Coastal Plain.

Class II soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices. These include gently sloping, deep, well-drained loams and fine sandy, gravelly sandy and sandy loams in the Coastal Plain. Also included are soils which have moderate limitations because of excess water or droughtiness, such as deep, gently sloping, moderately well-drained and somewhat poorly drained sandy loams and silt loams in the Coastal Plain.

Public Open Space: "Major Public Open Space and Recreation Areas in New Jersey as of January 1973," map at the scale of 1 inch equals 4 miles in, Outdoor Recreation in New Jersey; New Jersey Statewide Comprehensive Outdoor Recreation Plan; State of New Jersey Department of Environmental Protection, Office of Environmental Review, Trenton (1973).

Major Federal, Interstate, State and County open space and recreation areas are presented on a base map of political subdivisions of New Jersey and major highway network. (This base was prepared in 1972 by the New Jersey Department of Transportation Division of

Planning in cooperation with the U.S. Department of Transportation Federal Highway Administration.) This has been photographically enlarged to 1:100,000 scale.

White Cedar Stands:
(Prime Forests)

Atlantic White Cedar stands along with pigmy forest are represented as interpreted from Jack McCormick and Leslie Jones, "The Pine Barrens Vegetation and Geography," New Jersey State Museum (1973) Res. Rept. No. 3. Information was sketched on base maps at scale of 1:250,000, by the State of New Jersey, Department of Environmental Protection, Office of Coastal Zone Management and generalized for inclusion in Guidelines Maps at 1:100,000.

Slopes Over 15%:

Slopes of 15 percent are found only in Monmouth County portions of the Coastal Area. Data sources were U.S.G.S. maps of 1:24,000, as validated by the Department of Environmental Protection.

Outside Coastal Area: These are lands shown on the maps that are outside the boundaries established by the Legislature in the Coastal Area Facility Review Act of 1973.

It is important to underscore the fact that the CAFRA Jurisdiction extends to the three-mile territorial limit in the Atlantic Ocean and to the State boundaries in Raritan and Delaware Bays.

Land appearing in white on the maps, within the CAFRA boundaries, is essentially undeveloped, and without the sensitive environmental features depicted. It may be considered basically developable, subject to detailed site studies which can well reveal the presence of un-mapped conservation features (e.g., historic areas) or other site-specific limitations on construction.

II. Use of the Maps

The maps provide a useful generalized guide to the issues and to the development potential of the Coastal Area during the Interim Guidelines period. Existing developed areas and white areas within 1,000 feet of development concentrations can be readily identified as those where growth can be encouraged during the interim guidelines period (with the exception of developed areas located on sensitive environmental features, where growth would be restricted). Most of the principal features identified for Preservation or Conservation also appear on a generalized basis on these maps. Again, however, they must be considered primarily as basic guides to development or protection, to be supplemented in any specific case by detailed features maps of particular areas.

SELECTED REFERENCES*

*In this presentation, books and periodicals are underlined; all other documents, published and unpublished, are designated with quotation marks.

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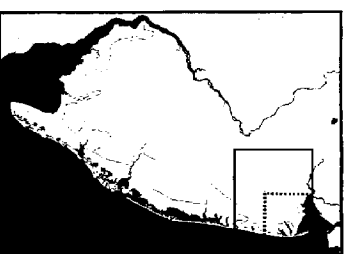
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RARITAN BAY

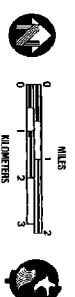
Sandy Hook

Keansburg

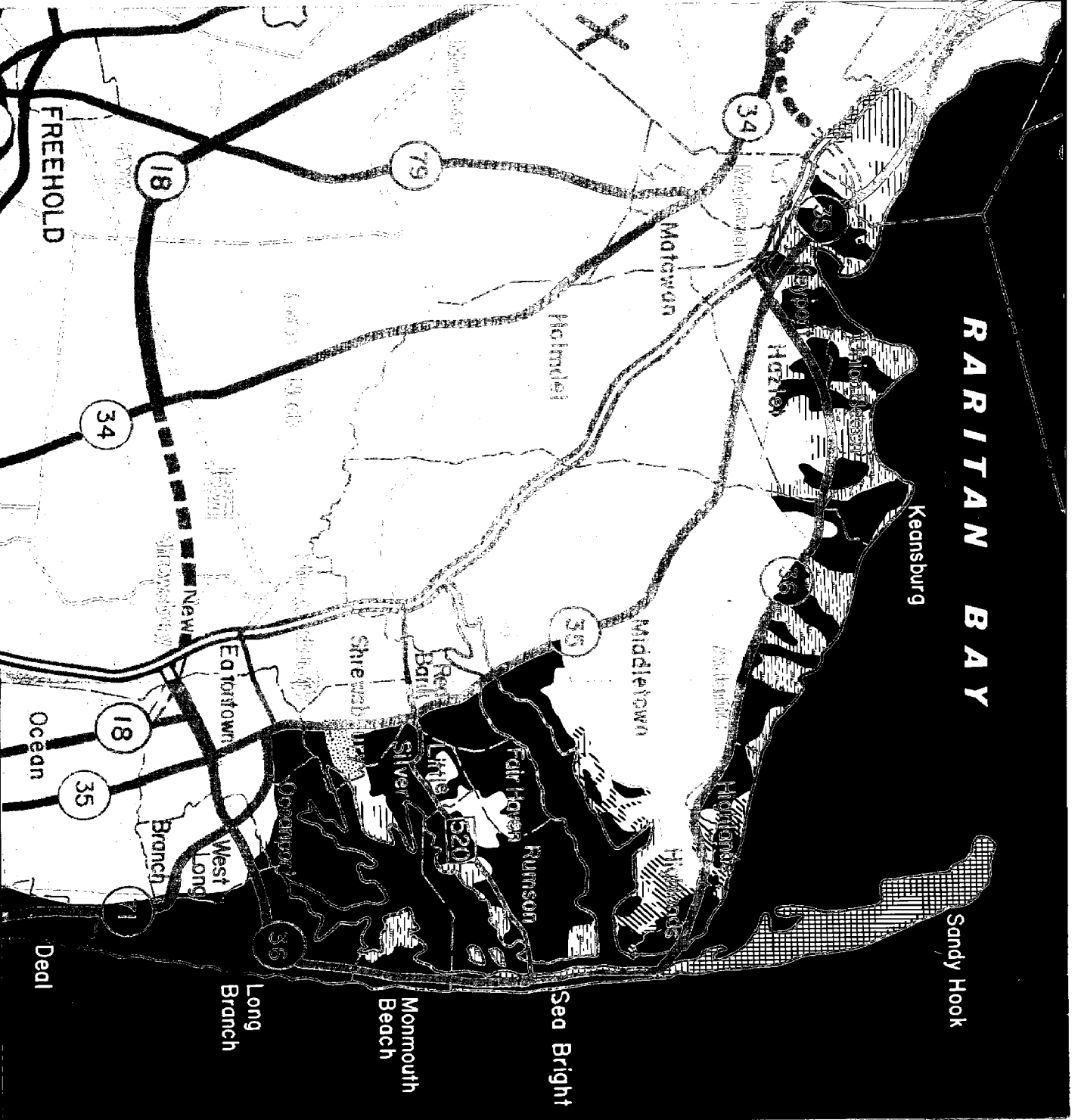
MAP 2a
THE COASTAL AREA
OF NEW JERSEY
NORTHERN SHORE
MIDDLESEX AND MONMOUTH
COUNTIES
Developed and Selected
Environmentally Sensitive Areas



- Developed Areas
- Public Open Space
- Wetlands
- Flood Prone Areas
- Class I and II Soils
- White Cedar Stands
- Slopes Over 15 Percent
- Outside Coastal Area



Scale 1:100,000
INTERIM LAND USE AND DENSITY GUIDELINES
STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF COASTAL ZONE MANAGEMENT
DECEMBER 1975

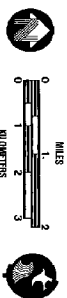
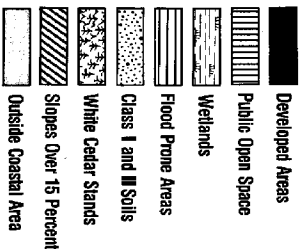
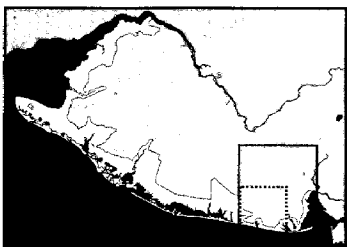




MAP 2b THE COASTAL AREA OF NEW JERSEY

Developed and Selected
Environmentally Sensitive Areas

NORTHERN SHORE
MIDDLESEX AND MONMOUTH
COUNTIES

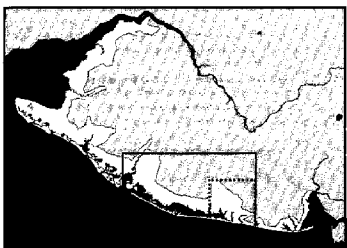


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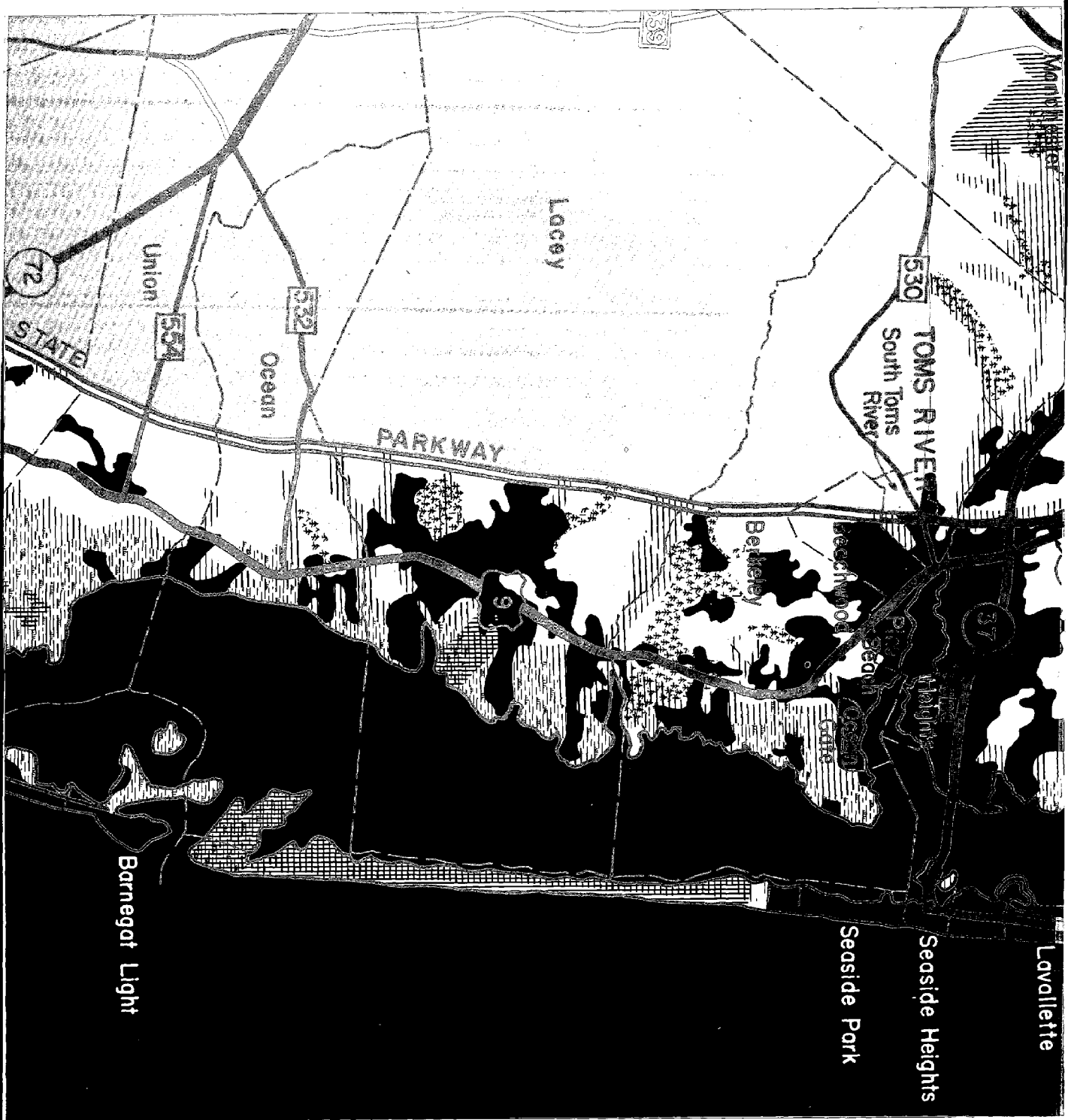


MAP 3a
THE COASTAL AREA
OF NEW JERSEY
 Developed and Selected
 Environmentally Sensitive Areas
CENTRAL SHORE
OCEAN COUNTY



- Developed Areas
- Public Open Space
- Wetlands
- Flood Prone Areas
- Class I and II Soils
- White Cedar Stands
- Outside Coastal Area

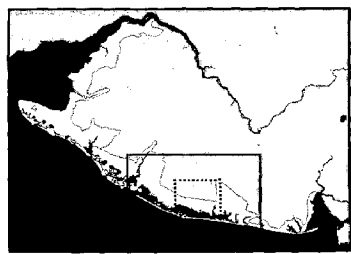
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 MILES
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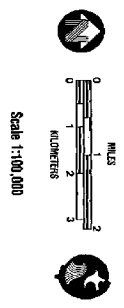
MAP 3b THE COASTAL AREA OF NEW JERSEY

Developed and Selected
Environmentally Sensitive Areas

CENTRAL SHORE
OCEAN COUNTY



- Developed Areas
- Public Open Space
- Wetlands
- Flood Prone Areas
- Class I and II Soils
- White Cedar Stands
- Outside Coastal Area

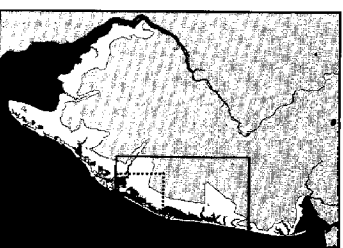


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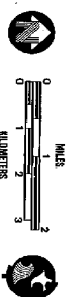
MAP 3c **THE COASTAL AREA** **OF NEW JERSEY**

Developed and Selected
 Environmentally Sensitive Areas

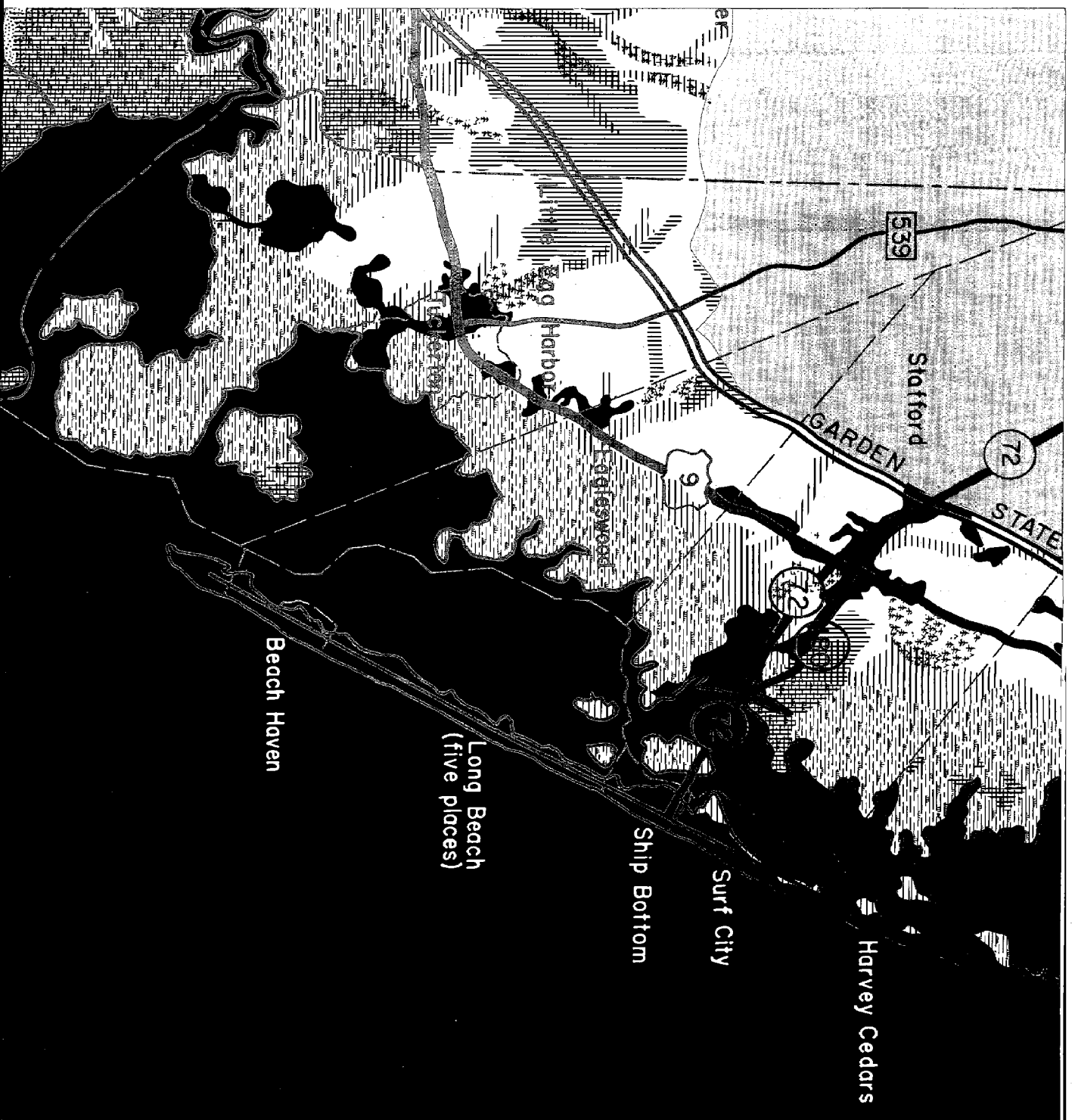
CENTRAL SHORE
OCEAN COUNTY

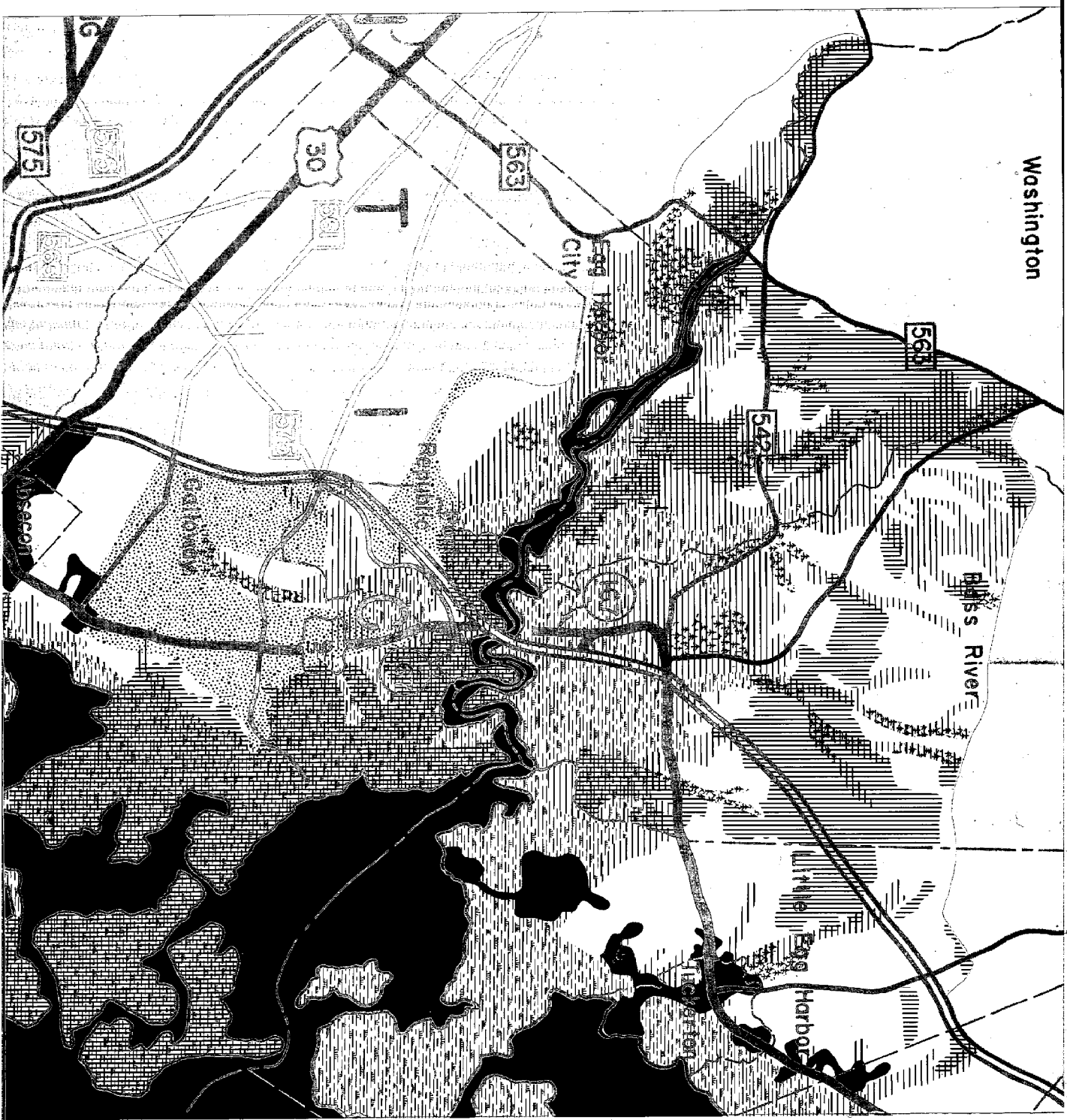


- Developed Areas
- Public Open Space
- Wetlands
- Flood Prone Areas
- Class I and II Soils
- White Cedar Stands
- Outside Coastal Area



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 DEPARTMENT OF ENVIRONMENTAL PROTECTION
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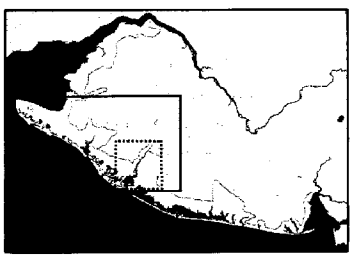




MAP 4a THE COASTAL AREA OF NEW JERSEY

Developed and Selected
Environmentally Sensitive Areas

SOUTHERN SHORE
BURLINGTON, ATLANTIC AND
CAPE MAY COUNTIES



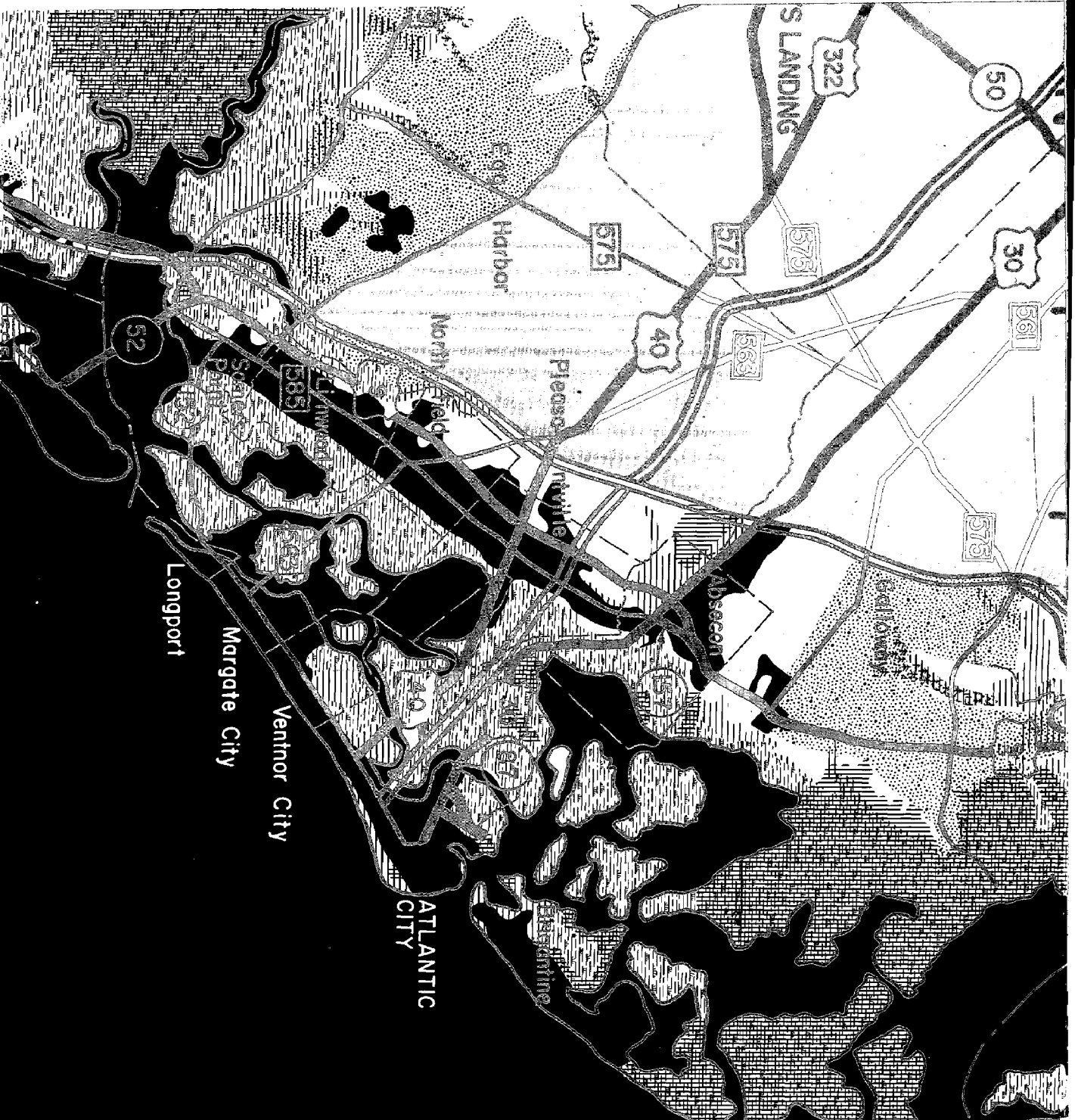
- Developed Areas
- Public Open Space
- Wetlands
- Flood Prone Areas
- Class I and II Soils
- White Cedar Stands
- Outside Coastal Area

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MILES
0 1 2 3

KILOMETERS
0 1 2 3

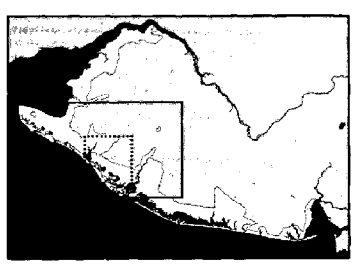
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MAP 4b THE COASTAL AREA OF NEW JERSEY

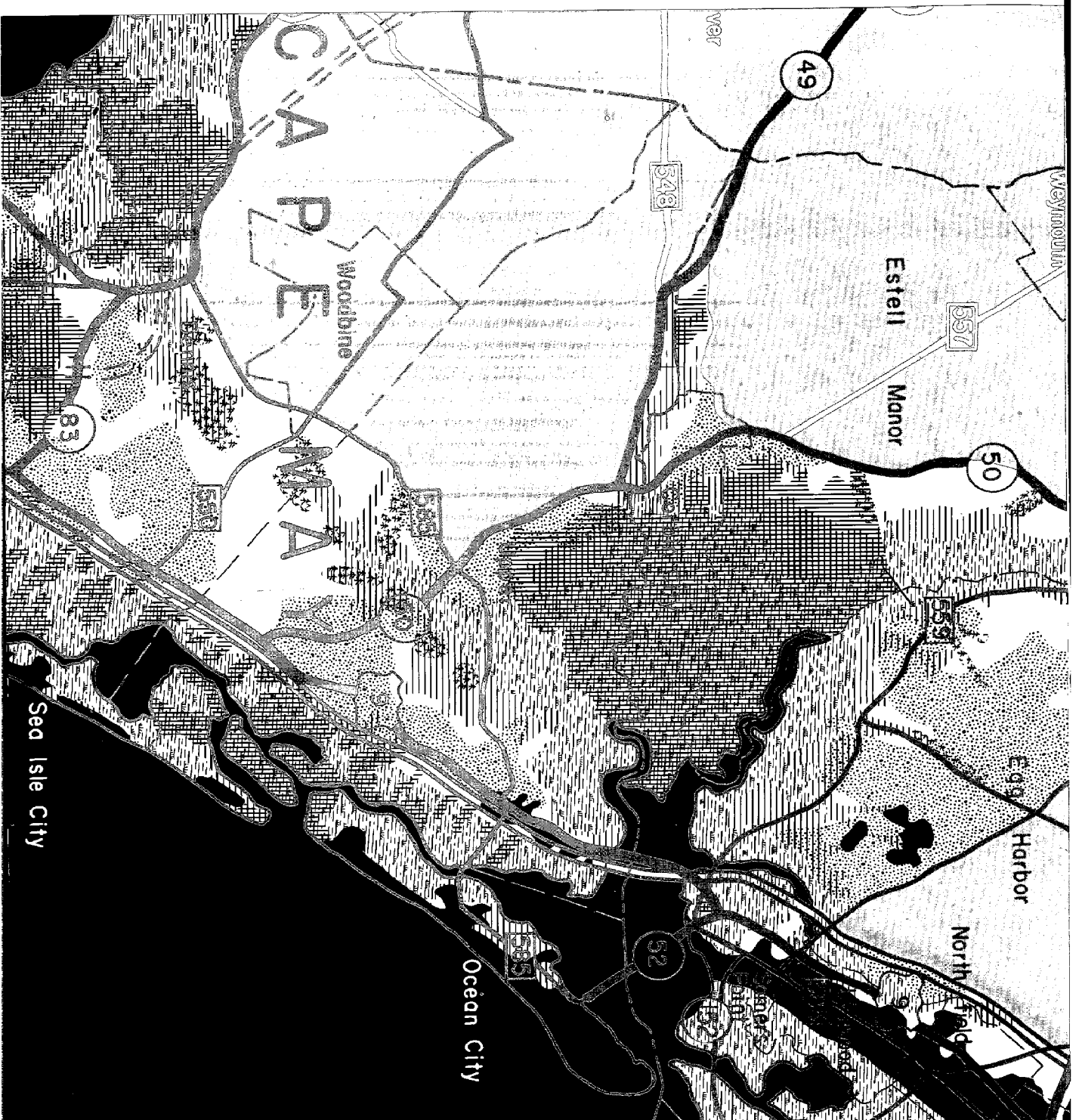
Developed and Selected
Environmentally Sensitive Areas

SOUTHERN SHORE
BURLINGTON, ATLANTIC AND
CAPE MAY COUNTIES



- Developed Areas
- Public Open Space
- Wetlands
- Flood Prone Areas
- Class I and II Soils
- White Cedar Stands
- Outside Coastal Area

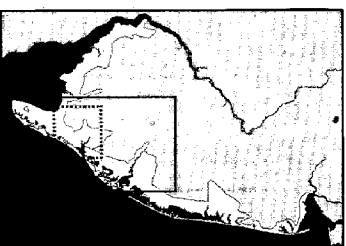
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MILES
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INTERIM LAND USE AND DENSITY GUIDELINES
STATE OF NEW JERSEY
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OFFICE OF COASTAL ZONE MANAGEMENT
DECEMBER 1975



MAP 4c **THE COASTAL AREA** **OF NEW JERSEY**

Developed and Selected
 Environmentally Sensitive Areas

SOUTHERN SHORE
BURLINGTON, ATLANTIC AND
CAPE MAY COUNTIES



- Developed Areas
- Public Open Space
- Wetlands
- Flood Prone Areas
- Class I and II Soils
- White Cedar Stands
- Outside Coastal Area



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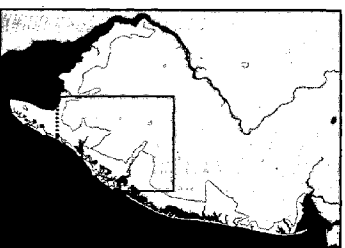
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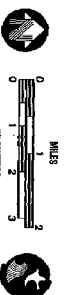
MAP 4d **THE COASTAL AREA** **OF NEW JERSEY**

Developed and Selected
 Environmentally Sensitive Areas

SOUTHERN SHORE
 BURLINGTON, ATLANTIC AND
 CAPE MAY COUNTIES



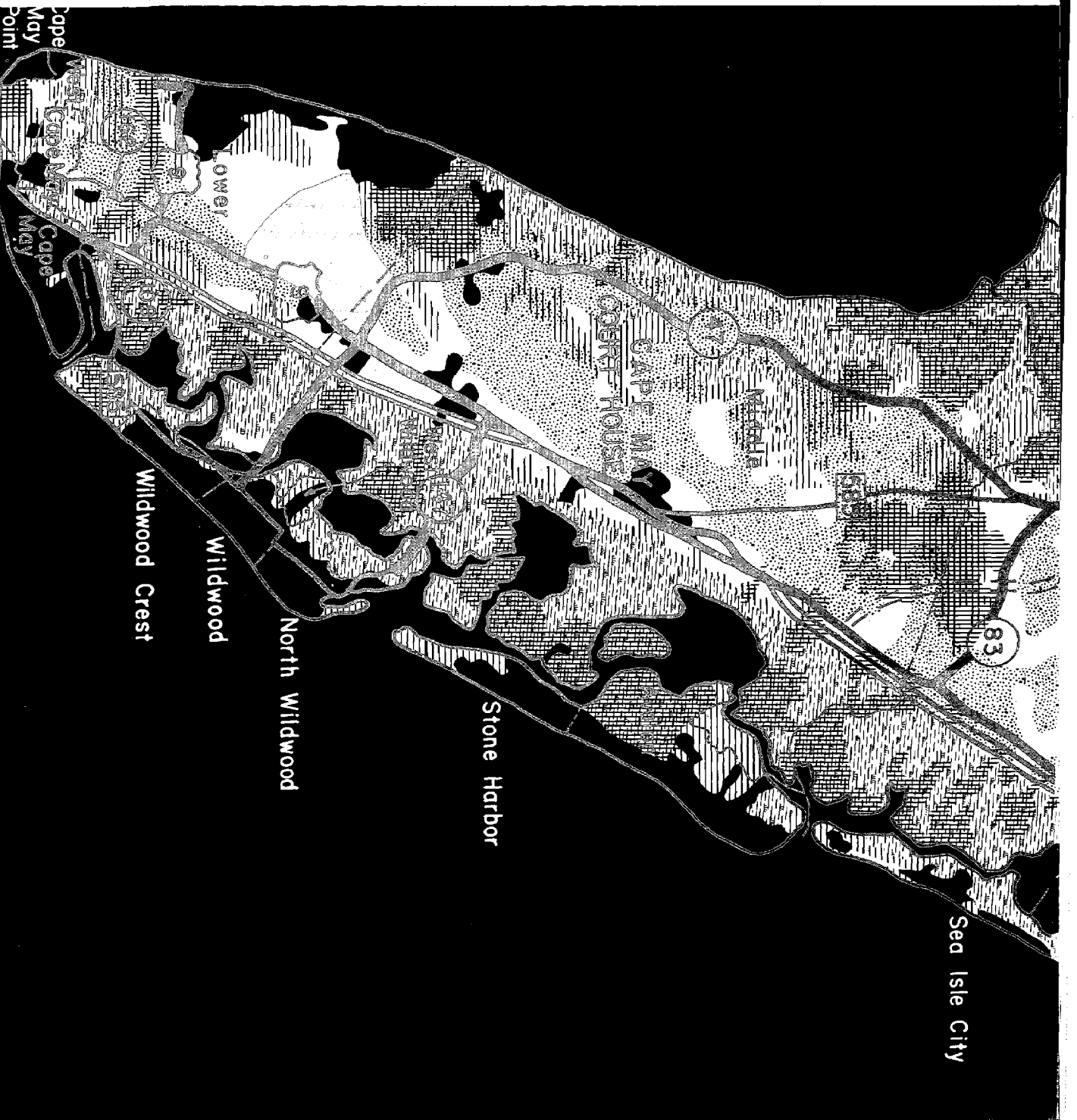
- Developed Areas
- Public Open Space
- Wetlands
- Flood Prone Areas
- Class I and II Soils
- White Cedar Stands
- Outside Coastal Area



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 STATE OF NEW JERSEY
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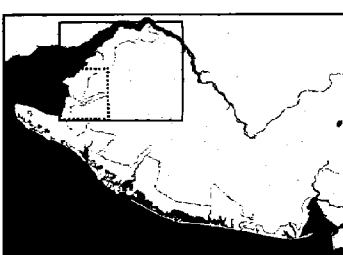
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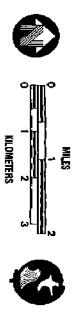
MAP 5a THE COASTAL AREA OF NEW JERSEY

Developed and Selected
Environmentally Sensitive Areas

DELAWARE BAY
SALEM AND CUMBERLAND
COUNTIES



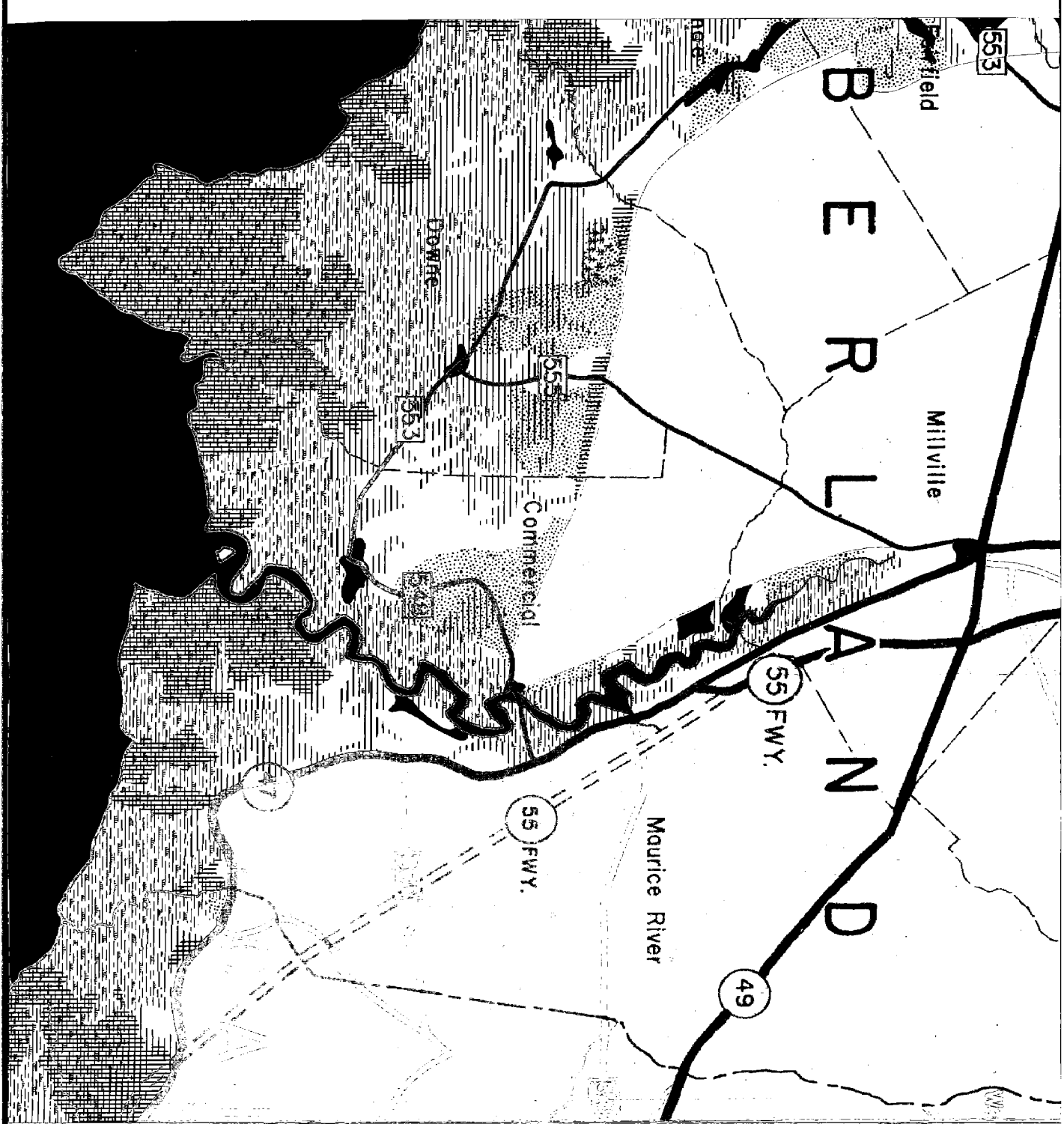
- Developed Areas
- Public Open Space
- Wetlands
- Flood Prone Areas
- Class I and II Soils
- White Cedar Stands
- Outside Coastal Area



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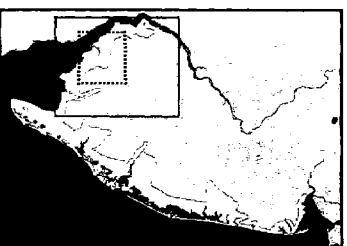
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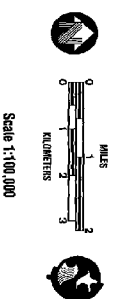
MAP 5b THE COASTAL AREA OF NEW JERSEY

Developed and Selected
Environmentally Sensitive Areas

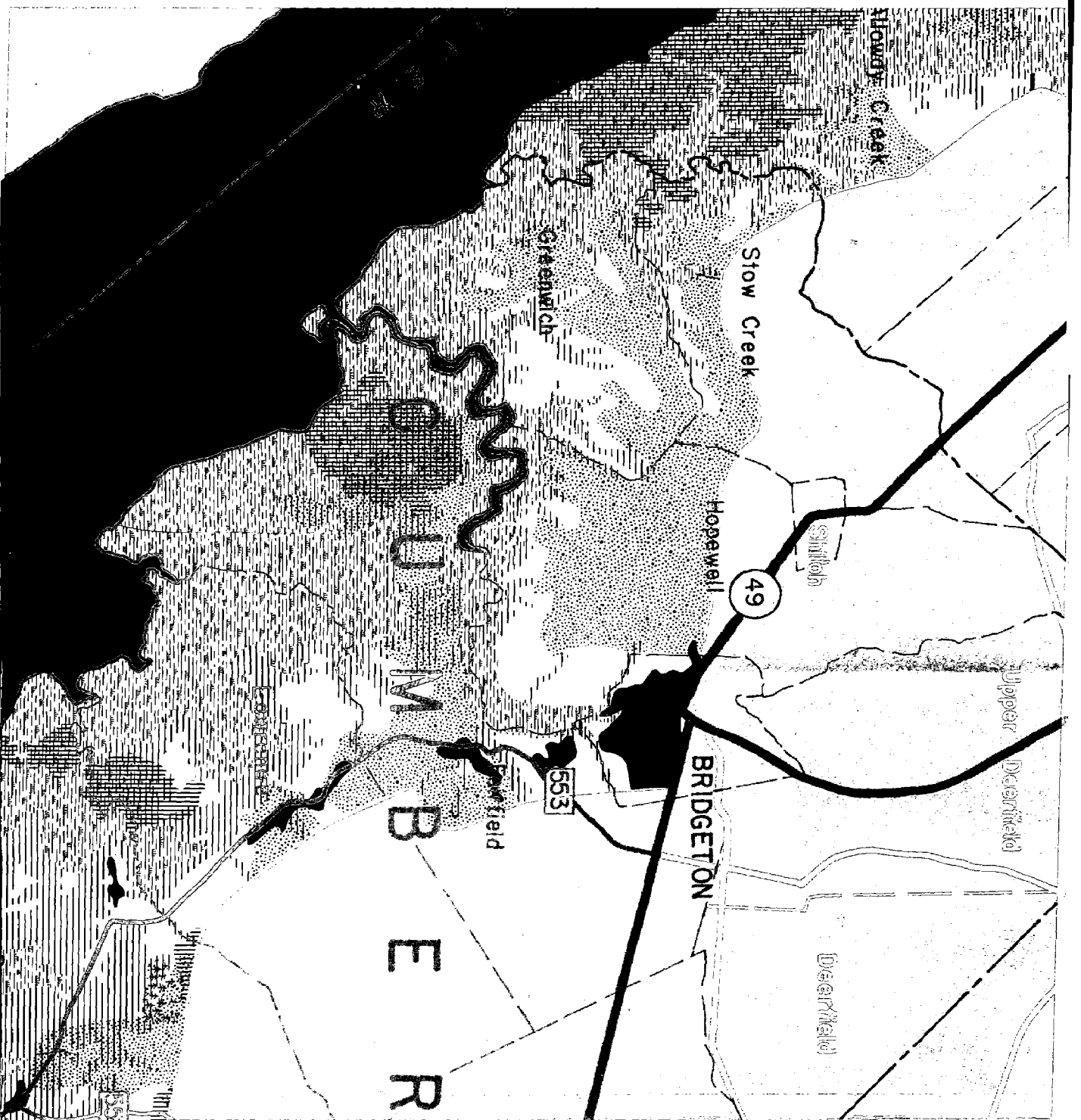
DELAWARE BAY
SALEM AND CAMBERLAND
COUNTIES



- Developed Areas
- Public Open Space
- Wetlands
- Flood Prone Areas
- Class I and II Soils
- White Cedar Stands
- Outside Coastal Area

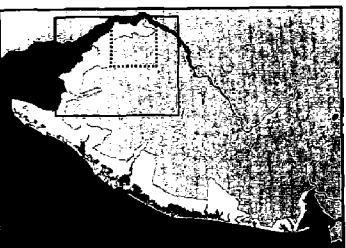


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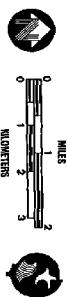


MAP 5C THE COASTAL AREA OF NEW JERSEY

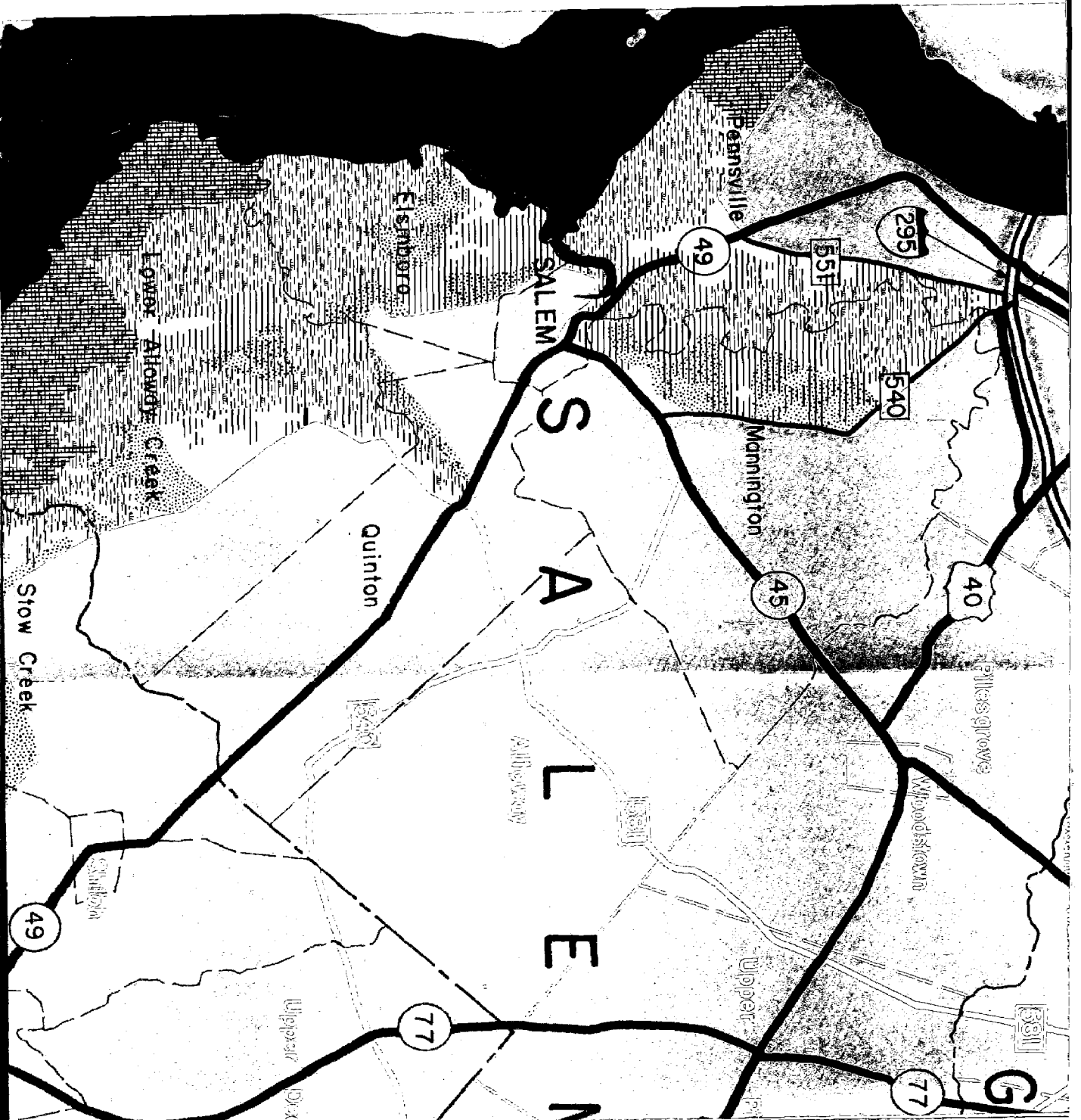
Developed and Selected
Environmentally Sensitive Areas
**DELAWARE BAY
SALEM AND CUMBERLAND
COUNTIES**



- Developed Areas
- Public Open Space
- Wetlands
- Flood Prone Areas
- Class I and II Soils
- White Cedar Stands
- Outside Coastal Area



Scale 1:100,000
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